SUBSTANCE USE & MISUSE

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Volume 32 Number 5 1997

SUBSTANCE USE & MISUSE

April 1997

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Identification Statement. *Substance Use & Misuse* (ISSN: 1082-6084) is published monthly except semimonthly in January and June for the institutional rate of $1,550.00 and the individual rate of $775.00 by Marcel Dekker, Inc., P.O. Box 5005, Monticello, NY 12701-5185. Periodicals postage paid at Monticello, NY. POSTMASTER: Send address changes to *Substance Use & Misuse*, P.O. Box 5005, Monticello, NY 12701-5185.

Volume	Issues	Institutional Rate	Individual Professionals' and Student Rate	Foreign Postage		
				Surface	Airmail to Europe	Airmail to Asia
32	14	$1,550.00	$775.00	$52.50	$77.00	$91.00

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CODEN: SUMIFL 32(5) i–iv, 507–652 (1997)
ISSN: 1082-6084

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Contributions to this journal are published free of charge.

Library of Congress Catalog Card Number 66-9896.

Effective with Volume 18, Number 7, this journal is printed on acid-free paper.

Substance Use & Misuse, 32(5), iii–iv, 1997

Announcement

The Mediterranean Institute

UPDATE
WHERE: VALDARNO, ITALY
WHEN: JUNE 9–13, 1997
FORMAT: TWO HOUR WORKSHOPS
LANGUAGE: ENGLISH

Following are the faculty and the topics of their workshops correct as of January 1997.

WHO	WHAT
Manuella Adrian, M. Sc. [CAN]	Cross Cultural Contexts: Their Meanings & Implications in the Substances Use(r) Field
Dr. Mike Agar [USA]	Ethnographic Issues
Prof. Menachem Amir [IL]	The Undercover Agent
Prof. Massimo Buscema [IT]	Planning, Implementing & Assessing Substance Use Intervention: Using Artificial Neural Networks & Other Non-linear Paradigms
Dr. John Carnevale [USA]	Federal Drug Policy in the United States
Dr. Richard Dembo [USA]	Innovative Approaches to Identifying & Responding to the Problems of High-Risk (Substance Use) Youth
Dr. Sandra Garcia [USA]	The Law & Substance Use Intervention: Options, Processes, "Demands" & Unresolved Issues
Dr. Jean Gilbert [USA]	Biculturalism & Substance Use: Women

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Dr. Ted Godlaski [USA]	Ethical Aspects of Substance Use Intervention
Dr. Harold Holder [USA]	Prevention Models, Theories & Programs
Dr. Jeannette Johnson [USA]	Children at Risk for Substance Use
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Dr. John Lilja [SF]	Social Pharmacology: Parameters, Processes & Issues
Prof. Paolo Nencini [IT]	The Rules of Drug Taking in the Ancient World: Learning from the Past
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Dr. Moira Plant [UK]	Treating the Female Substance User
Dr. Ronald Simeone [USA]	Estimating the Size of Hidden Populations of Substance Users
Dr. Barry Spunt [USA]	Gambling

Registration is limited to 80 participants.

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Substance Use & Misuse, 32(5), 507–554, 1997

Perceived Effectiveness of Community-Based Measures Against Alcohol Misuse among "Problem" and "Nonproblem" Drinkers*

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ABSTRACT

Perceptions of the effectiveness of 11 measures against alcohol misuse were examined in a community survey. School-based programming was most often and increased alcohol taxation least often rated effective. Binge drinking in the past year and male gender were inversely associated with perceived effectiveness, particularly of countermeasures with direct personal impact, including stricter enforcement of laws against driving while intoxicated and increased taxation. Studies of support for alcohol control have reported similar relationships between drinking behavior and support for measures imposing personal

*An earlier version of this paper was presented at the Annual Meeting of the American Public Health Association, 8–12 November 1992, Washington, D.C.

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restrictions. Perceived effectiveness and support thus appear to be related yet distinct constructs. Improved understanding of the interrelationships among perceived effectiveness, support, drinking behavior, and empirically demonstrated effectiveness of countermeasures may aid in identifying strategies which are both effective and acceptable to targeted populations.

Key words. Substance use; Alcohol drinking; Prevention and control

INTRODUCTION

Alcohol-use-related problems exact a tremendous toll on social and economic life in the United States. Almost 600,000 patients are treated for alcohol misuse and alcohol dependence in the United States each year (McCaul and Furst, 1994) while many millions more are affected by the harmful consequences of drinking. Alcohol involvement in traffic fatalities, the leading cause of death for people ages 1 through 34 (National Center for Health Statistics, 1994), is estimated to be as high as 45% (National Highway Traffic Safety Administration, 1994). Adverse social and medical consequences of alcohol misuse cost the United States approximately $150 billion per year (US Department of Health and Human Services, 1990).

Alcohol-use-related problems have too often been left to fluctuate unattended (WHO, 1994). Public investment is required to develop policies that will manage and control their prevalence in the public interest. Reduction of alcohol-use(r)-related problems requires modification of diverse contributing conditions, including alcohol availability, transportation policies, and the behavior of individual drinkers. A wide range of economic, legal, and educational approaches have been developed toward this end and exist as possible solutions. Increases in taxes on alcoholic beverages (Cook, 1981, 1982; Cook and Tauchen, 1982; Phelps, 1984; Saffer and Grossman, 1987), more stringent enforcement of laws pertaining to drinking and driving (Homel, 1988, 1990; Lacey et al., 1990; Nichols and Ross, 1990), school- and worksite-based interventions (Schaps et al., 1986; Shope et al., 1992), and training of alcoholic beverage servers in techniques of responsible service (Howard-Pitney et al., 1991; Russ and Geller, 1987; Saltz, 1987) are examples.

Higher rates of alcohol taxation are associated with significantly reduced motor vehicle crash and crash-related death rates (Cook, 1981; Cook and Tauchen, 1982; Holder and Blose, 1987; Saffer and Grossman, 1987), as well as with lower alcohol consumption as reflected in rates of cirrhosis mortality (Cook, 1981, 1982; Cook and Tauchen, 1982). Similarly, law-enforcement measures such as sobriety checkpoints, which increase the certainty of appre-

hension (Homel, 1988, 1990; Lacey et al., 1990; Ross, 1985, 1987; Zador et al., 1989), and administrative license revocation, which increases swiftness of punishment for alcohol-impaired driving (Klein, 1989; Nichols and Ross, 1990; Zador et al., 1989), have produced significant declines in alcohol-use-related crashes. Server training programs have been shown to reduce the amount of alcohol consumed by patrons (Russ and Geller, 1987) and the probability that patrons will become intoxicated (Saltz, 1987). Conversely, there is not convincing evidence of effectiveness of school- and worksite-based prevention and education programs in changing either alcohol-use-related behavior or its adverse outcomes (Moskowitz, 1989; Kinder et al., 1980; Shope et al., 1992; Schaps et al., 1986).

Determining what principles should guide the selection of appropriate strategies and allocation of public dollars is controversial. Many scientists place a priority on empirical evidence of program efficacy, as ample research is now available to inform the policy process. An increasing number of authors agree, however, that demonstrated efficacy must be coupled with some indication of local attitudes and beliefs to yield successful implementation in a community (Rothman, 1979). This view is based on the premise that efforts to promote the health of communities should not be externally imposed; rather, communities must be involved in health promotion efforts through a partnership with health professionals and scientists. Several recent alcohol studies have reflected this approach, attempting to assess community reactions to alcohol control measures and thereby predict a community's willingness to accept change and contribute to control efforts (Kaskutas, 1992; Wagenaar and Streff, 1990).

These studies have used measures of support for alcohol control strategies as a gauge of community attitudes on the assumption that the support of the general public is necessary for the sustained success of alcohol control policies (Kaskutas, 1992). While such investigations indeed shed light on community beliefs regarding alcohol control strategies, it is not clear what self-reported "support" for a particular policy actually measures. Most public opinion surveys only ask respondents to indicate their support or lack of support for various issues without explicitly defining what is meant by "support" or asking respondents to specify why they do or do not support particular policies. Consequently, the meaning and implications of lack of support for a particular policy remain unclear. Unwillingness to support could, for example, reflect the belief that the policy would be ineffective, too costly to implement, personally threatening, or generally unacceptable.

There is evidence that individuals may claim support for policies that they view as ineffective. For example, while most of the respondents surveyed by Kaskutas (1992) and Hilton and Kaskutas (1991) expressed support for warning labels, the same proportion regarded the labels as relatively ineffective in

changing the behavior of "heavy" drinkers. In addition, approximately half of the respondents expressed support for increased alcohol taxes, but fewer than one-third believed this measure to be effective in changing the behavior of "heavy" drinkers. In this sample, attitudes about effectiveness had little connection with reasons for supporting different policies. Discrepancies between expressed support and perceived effectiveness of selected control measures suggest that self-reported support may be an inflated measure of acceptance of, or resistance to, control efforts, perhaps because it reflects "noise" introduced by socially desirable response bias.

Public perceptions of effectiveness may then provide a useful alternative measure of community values and beliefs relevant to the introduction of alcohol control strategies. Such measures could be useful to identify differences in perceptions held by various constituencies within the targeted communities for use in planning and implementing prevention efforts. In general, individuals are most likely to change attitudes and behaviors in response to persuasive community campaigns when the messages target beliefs salient to them, are delivered by communicators perceived to be knowledgeable or expert as well as trustworthy, and are conveyed through modalities which are also perceived as credible. Other key factors in the success of persuasive interventions include: (a) the selection of target outcomes involving either creation of new opinions or channeling of existing attitudes or behaviors in directions not very dissimilar from those held at baseline; (b) the delivery of mutually reinforcing messages through multiple modalities (e.g., by supplementing media messages with personal contact interventions); (c) the inclusion of "inoculation" messages to increase resistance to counterarguments against the thrust of the campaign; and (d) the use of messages with which receivers make personal connections (Doob, 1966; Katz and Lazarsfeld, 1955; McGuire, 1981; Perloff, 1993).

Though underresearched, community perceptions of effectiveness appear to be an important component of public endorsement of and engagement in control strategies. The fact that influential segments of the public have perceived particular countermeasures as effective has been shown to contribute to the success of implementation by safety agencies (Ross, 1992). For example, the policies perceived as most effective by representatives of Mothers Against Drunk Driving and other citizen activist movements have been used by federal and state government officials to demonstrate popular support for such efforts and aid in their implementation (Ungerleider and Bloch, 1988). Conversely, measures perceived as ineffective may be particularly difficult to "sell" to communities, even with strong empirical evidence demonstrating their efficacy.

Although a dynamic process, and liable to change, knowledge of the perceived effectiveness of particular control measures could optimize prevention efforts by enabling communities and professionals to identify and select for

implementation those interventions with the most favorable balance between perceived and scientifically demonstrated effectiveness. This knowledge could also help identify control measures which may be resisted either by the general public or targeted subgroups. For such measures, acceptance and successful implementation may require additional efforts on the part of program planners to affect community norms and/or attitudes. On the other hand, community perceptions of ineffectiveness may indicate that implementation of a particular measure is inappropriate and in conflict with local values and beliefs. Reasons for community resistance to particular strategies should be understood and subsequently used to inform social and public health policy.

Limited evidence available to date (Kaskutas, 1992) suggests that one particular subgroup that may report less favorable attitudes, including lower levels of perceived effectiveness, is participants who drink "heavily." Wagenaar and Streff (1990) found that daily drinkers were significantly less likely than less frequent drinkers to support tax increases, lower legal blood alcohol limits for drivers, limiting hours of alcohol sales, social host liability, and immediate 90-day driving license suspensions for persons arrested for drinking and driving. Individuals who reported three or more episodes in which they consumed four or more drinks during the 2 weeks prior to being surveyed were significantly less likely than those reporting lower levels of drinking to support these measures as well as prohibition of concurrent alcohol and motor vehicle fuel sales, limits on the number of alcohol sales outlets, and commercial liability. Similarly, in a survey of seven Minnesota communities, Schmid et al. (1990) found that respondents who reported the greatest use of alcohol were least supportive of nine alcohol control policies. Except for the reports of Hilton and Kaskutas (1991) and Kaskutas (1992), we have found no published studies addressing perceived effectiveness of alcohol countermeasures in the general population, but hypothesize that perceptions may, like support, show an inverse relationship to respondents' drinking behavior.

The goals of this study were: 1) to assess the perceptions of effectiveness of 11 strategies for the control of alcohol misuse in a community sample; and 2) to identify subgroups that report particularly high or low levels of perceived effectiveness.

METHODS

The Rhode Island Community Alcohol Abuse and Injury Prevention Project (CAAIPP) was a community intervention trial of responsible service training for alcoholic beverage servers and enhanced enforcement of alcohol-related laws in the prevention of alcohol misuse and related injuries, especially those due to motor vehicle crashes and assaults (Rhode Island Department of

Health, 1989; Harrington et al., 1989). Three comparable Rhode Island communities were selected for study based on size, prevalence of alcohol-related problems, and levels of institutional development and community organization.

The communities were urban, ranging in size from 19,400 to 45,300 people. The median ages of residents ranged from 29 to 32 years. Eighty-nine to 99% of the residents in the communities were White; one community had a large French-Canadian, one a large Irish, and one a large Italian ethnic group. The modal religious affiliation was Catholic. Six to seven percent of the residents of each community were foreign born, and seven to 36% spoke languages other than English at home. Of residents 25 years of age and older, 45 to 74% had graduated from high school. Per capita income in 1979 ranged from $5,690 to $7,273, 7 to 16% of individuals were considered "poor," and 27 to 50% worked outside their immediate areas of residence (US Bureau of the Census, 1980). Two of the three communities were summer resort areas, of which one was also home to a military installation at the time the project was conducted. The other was a former mill town which was particularly hard hit by the recession of the early 1990s. Each community had its own local police department, public school district, and newspaper, as well as one or more local hospitals and one or more radio stations (Rhode Island Department of Health, 1989).

One community was chosen randomly to receive the intervention; the others served as comparison communities. Multiple methods were used to evaluate the effects of the intervention, including community surveys and surveillance measures of arrests, motor vehicle crashes, and medical service utilization (Rhode Island Department of Health, 1989).

The Three-Community Alcohol and Health Survey was developed to assess community residents' overall health status, including problems potentially related to alcohol; alcohol-related knowledge, attitudes, and behavior; and social impairments due to drinking. This telephone survey, which took an average of 20 minutes to administer, consisted of 156 items; items were selected from existing health-related survey instruments. The instrument appears in the Appendix.

Before its use in this project, the survey underwent two rounds of pretesting, each involving samples of 10 respondents in each of the three communities whose households were not in the actual study sampling frame. In the first round, specially trained pretest interviewers made note of difficulties with the flow of questions, questions that were hard to read or comprehend, and cases in which response categories did not fit the questions optimally. On the basis of the first round of pretesting, the instrument was revised and subjected to the second round of pretesting and revisions before study interviewing began. Interviewers were required to have completed some college coursework, and

underwent a minimum of 4 days of training before administering the survey to study respondents.

After informed consent was obtained, the survey was administered to a random sample of 1,007 household residents 18 years and older between January and March 1991. Households were sampled by random digit dialing, and respondents within households were selected using a modification of the Kish procedure (Kish, 1965). The estimated response rate was 73.0%.

The survey assessed respondents' perceptions of the effectiveness of 11 alcohol control strategies ranging from school and workplace prevention programs to roadblocks (see Table 2). Respondents were asked, for example: "Do you think increasing alcohol prevention programs in schools would be effective or not effective in reducing problems resulting from drinking?" Two indicators of problem drinking were examined in relation to perceived effectiveness of these strategies. One was the total number of lifetime social impairments due to drinking: namely, drunk driving arrests, other alcohol-use-related arrests, losing or quitting jobs, lost friendships, trouble in households, marital disruptions, and arguments and/or fights. The second was "binge" drinking during the past year, which we defined in a manner consistent with Wechsler and Isaac (1992) as an affirmative answer to the following question: "Considering all types of alcoholic beverages, did you have five or more drinks at any one time, during the past 12 months?" We use the term "binge" solely as a shorthand phrase to indicate "heavy episodic drinking." We have adopted this definition to ensure the comparability of our analyses with those of other alcohol researchers (Johnston et al., 1991; Presley et al., 1993; Wechsler et al., 1995), and because evidence suggests that this classification identifies a form of alcohol consumption of demonstrated public health significance (Wechsler et al., 1994). Perceived effectiveness was also examined with respect to gender, marital status, age, and education.

Since the focus of the study was on the attitudes of current drinkers, we excluded 287 noncurrent drinkers from the analysis. Bivariate associations between perceived effectiveness of each strategy and problem drinking and other categorical independent variables were examined using χ^2 tests (Daniel, 1995). The total numbers of control measures rated effective by various subgroups were compared using Wilcoxon rank sum tests and Kruskal–Wallis analyses of variance (Daniel, 1995). Multivariable logistic regressions (Hosmer and Lemeshow, 1989) were fit to estimate the relationship of problem drinking to perceived effectiveness, independent of the confounding effects of sociodemographic variables.

RESULTS

After the exclusion of noncurrent drinkers, the total sample numbered 720 respondents. Selected demographic characteristics of the sample are given in

Table 1. Study participants had typically lived in their respective communities for over 20 years, and the majority expected to reside there 2 years later. On average, respondents were in their late 30s to early 40s, with a median age of 38; the slight excess of females mirrored the gender distribution in the three communities. Over half were currently married; the rest were evenly split between single (never married) and previously married (separated, divorced, or widowed) respondents. The modal educational attainment was high school graduation, followed closely by college graduation; thus, the respondent sample tended to be better educated than the communities taken as a whole. Among those who had ever worked outside the home, the most frequently reported occupational status was professional or managerial. More than one-third of the survey respondents reported 1990 pretax income of less than $25,000.

Table 1.

Selected Demographic Characteristics of Survey Respondents (n = 720)

Length of residence in survey community, mean ± SD	24.3 ± 20.3
Expect to reside in community 2 years later	81.3%
Age, mean ± SD (median)	42.5 ± 15.6 (38)
Gender:	
Male	46.3%
Female	53.7%
Marital status:	
Single, never married	22.1%
Married	55.2%
Separated/divorced/widowed	22.7%
Highest level of education completed:	
Less than high school graduation	10.4%
High school graduation	35.6%
Some college	22.5%
College graduation	31.5%
Current or most recent occupational status:	
Professional/managerial	38.7%
Clerical/sales	21.9%
Skilled blue-collar	20.7%
Semiskilled blue-collar	18.5%
Pretax income (1990):	
<$10,000	3.5%
$10,001–$15,000	8.3%
$15,001–$25,000	23.1%
$25,001–$50,000	44.1%
>$50,000	21.0%

As shown in Table 2, the strategies most frequently perceived as effective by the sample as a whole were increased prevention programming in schools, alcoholic beverage server training, and stricter enforcement of laws pertaining to driving while intoxicated. Stronger warnings on beverage containers, lower legal blood alcohol limits for drivers, and increased alcohol taxation were least often rated as effective. However, perceptions of effectiveness varied both with

Table 2.

Perceived Effectiveness of Control Strategies (in %) among Current Drinkers by Recent Binge Drinking Status and Gender

Control measure	Binge− (n = 452)	Binge+ (n = 268)	Male (n = 335)	Female (n = 385)	Total (n = 720)
Increase alcohol prevention programs in schools	92.7	90.6[a]	90.2	93.9[c]	91.9
Train servers	86.6	82.3	81.2	88.1[b]	85.0
Increase drunk driving law enforcement	89.1	77.8[a]	80.0	92.2[a]	84.9
Increase alcohol prevention programs in workplaces	83.6	78.2[d]	80.2	86.1[c]	81.6
Use roadblocks to identify drunk drivers	82.1	71.9[b]	72.5	85.1[a]	78.3
Encourage nonalcoholic beverages	76.2	63.2[a]	64.1	80.0[a]	71.3
Prohibit alcohol advertising	52.1	40.0[b]	47.3	53.6[c]	47.6
Require health warning on alcohol ads	51.8	34.3[a]	43.2	52.6[b]	45.3
Put stronger warning on beverage containers	48.6	32.0[a]	40.0	49.6[b]	42.4
Lower legal blood alcohol limit for drivers	42.3	29.0[a]	34.6	45.9[a]	37.3
Increase alcohol taxes	29.1	15.4[a]	22.0	30.5[b]	24.0

[a] $p < 0.001$ by χ^2 ($df = 1$).
[b] $p < 0.01$ by χ^2 ($df = 1$).
[c] $p < 0.05$ by χ^2 ($df = 1$).
[d] $0.05 < p < 0.10$ by χ^2 ($df = 1$).

drinking behavior and with gender of respondents. Binge drinkers were significantly less likely than nonbinge drinkers to regard as effective nine of the 11 control measures; males were significantly less likely than females to rate each as effective. By contrast, lifetime social impairments due to drinking were not associated with perceived effectiveness of control strategies; respondents with two or more impairments were similar in their ratings of effectiveness to respondents with none or one.

Table 3 depicts the total numbers (mean ± SD) of strategies which respondents rated as effective by selected demographic and drinking behavior characteristics of respondents; namely, age, gender, binge drinking status, number of lifetime social impairments due to drinking, education, and marital status.

Table 3.

Mean (± SD) Number of Control Strategies Endorsed by Total Sample and by Respondent Characteristics, and Percentage of the Total Sample with Each Characteristic

Characteristic	Mean (SD)	Percentage of sample
Total sample	6.8 (2.3)	100.0
Age:[a]		
≤ 38 (sample median)	6.6 (2.2)	51.5
>38	7.1 (2.3)	48.5
Gender:[b]		
Male	6.3 (2.3)	46.3
Female	7.3 (2.1)	53.7
Consumption at a sitting of five or more drinks within past year:[b]		
Yes	6.1 (2.2)	37.2
No	7.3 (2.2)	62.8
Number of lifetime social impairments due to drinking:		
0 or 1	6.9 (2.3)	88.7
2+	6.5 (2.4)	11.3
Education:[a]		
<High school	7.1 (2.8)	10.4
High school graduate	7.1 (2.3)	35.6
Some college	6.8 (2.2)	22.5
College graduate	6.5 (2.1)	31.5
Marital status:[a]		
Single	6.4 (2.3)	22.1
Married	6.9 (2.2)	55.2
Separated, divorced, or widowed	7.1 (2.2)	22.7

[a] $p < 0.02$ by Kruskal–Wallis ANOVA for difference in number of control measures rated effective.

[b] $p < 0.001$ by Wilcoxon rank sum test for difference in number of control measures rated effective.

Binge drinkers, males, single individuals, and subjects at or younger than the sample median age of 38 years regarded significantly fewer strategies as effective than did nonbinge drinkers, females, and ever-married and older respondents. The number of control measures regarded as effective was also inversely related to education. However, the total number of strategies rated as effective did not differ by number of lifetime social impairments.

To determine the independent associations of binge drinking and perceived effectiveness of each control strategy, multivariable logistic regression models were fit, incorporating known confounders (gender, age, and marital status). Education was not strongly associated with binge drinking, and was excluded from these models. Marital status was modeled using two indicator variables (one to represent single and one to represent separated, divorced, and widowed), with "married" as the referent category. As shown in Table 4, the most consistent findings were that binge drinkers and males were less likely to rate most control strategies as effective. However, perceived effectiveness of server training and increased prevention programs in schools and workplaces were unassociated with binge drinking, and perceived effectiveness of requiring health warnings on alcohol advertisements, putting stronger warnings on alcoholic beverage containers, and prohibition of alcoholic beverage advertising were unassociated with male gender. Age and marital status were each independently associated with perceived effectiveness of only two strategies.

DISCUSSION

In the sample as a whole, the countermeasures most frequently rated effective were increases in school-based prevention programming and server training, and stricter enforcement of laws pertaining to driving while intoxicated. Least frequently perceived effective were stronger warnings on beverage containers, lower blood alcohol limits for drivers, and increased taxation. Within the sample, our results indicate that binge drinkers are less likely to regard most alcohol control strategies as effective than are nonbinge drinkers. This finding holds after adjusting for the potentially confounding effects of gender, age, and marital status. Males are also less likely than females to consider most measures effective, while associations with age and marital status are less consistent.

Study respondents, particularly binge drinkers and males, were least likely to regard as effective those strategies with a realistic potential for direct personal impact. For example, binge drinkers were less likely to rate as effective lowering legal blood alcohol limits for drivers, using roadblocks to detect drunk driving, and enhanced enforcement of drunk driving laws, all of which place problem drinkers at greater risk of arrest, loss of license, and, increasingly,

Table 4.

Estimated Odds Ratios and 95% Confidence Intervals from Logistic Regression of Perceived Effectiveness of Control Strategies on Respondent Characteristics

Control measure	Binge drinking	Male gender	Age > 38	Single	Separated/divorced/ widowed
Increase alcohol taxes	0.51 (0.33, 0.79)[c]	0.70 (0.47, 1.03)[a]	1.17 (0.80, 1.72)	1.15 (0.72, 1.83)	0.73 (0.46, 1.14)
Prohibit alcohol advertising	0.74 (0.52, 1.05)	0.85 (0.61, 1.20)	1.48 (1.06, 2.05)[b]	0.93 (0.63, 1.38)	0.95 (0.65, 1.39)
Require health warning on alcohol ads	0.56 (0.39, 0.80)[c]	0.81 (0.58, 1.13)	1.08 (0.78, 1.51)	0.90 (0.60, 1.35)	1.18 (0.80, 1.73)
Put stronger warning on beverage containers	0.60 (0.42, 0.87)[c]	0.82 (0.58, 1.15)	1.46 (1.04, 2.04)[b]	1.10 (0.73, 1.65)	1.23 (0.84, 1.81)
Increase school-based prevention programs	0.97 (0.51, 1.83)	0.63 (0.34, 1.16)[a]	0.67 (0.36, 1.25)	0.47 (0.25. 0.90)[b]	1.67 (0.70, 3.96)
Train servers	0.97 (0.60, 1.58)	0.70 (0.44, 1.11)[a]	1.00 (0.62, 1.61)	0.45 (0.27, 0.75)[c]	1.04 (0.57, 1.87)

Increase workplace prevention programs	0.88 (0.56, 1.37	0.71 (0.46, 1.09)[a]	1.20 (0.79, 1.84)	0.86 (0.53, 1.40)	1.01 (0.61, 1.68)
Encourage nonalcoholic beverages	0.74 (0.50, 1.08)[a]	0.54 (0.37, 0.79)[c]	1.20 (0.83, 1.74)	0.84 (0.55, 1.29)	0.90 (0.58, 1.39)
Increase drunk driving law enforcement	0.54 (0.33, 0.87)[b]	0.41 (0.25, 0.67)[c]	0.87 (0.54, 1.40)	1.32 (0.74, 2.33)	0.77 (0.45, 1.33)
Use roadblocks to identify drunk drivers	0.66 (0.43, 1.01)[b]	0.61 (0.40, 0.92)[b]	0.79 (0.52, 1.19)	0.77 (0.48, 1.22)	0.93 (0.58, 1.50)
Lower legal blood alcohol limit for drivers	0.66 (0.45, 0.96)[b]	0.66 (0.47, 0.94)[b]	1.01 (0.72, 1.43)	1.00 (0.66, 1.51)	1.08 (0.72, 1.60)

[a] $p < 0.15$, Wald χ^2 ($df = 1$).
[b] $p < 0.05$, Wald χ^2 ($df = 1$).
[c] $p < 0.01$, Wald χ^2 ($df = 1$).

jail sentences. Similarly, as already noted, they were less likely than nonbinge drinkers to rate increasing alcohol taxes, which could make alcohol more difficult to purchase, as effective. Measures which may be considered less likely to affect individuals personally (server training and increased worksite- and school-based prevention programs) were viewed as effective by binge drinkers and nonbinge drinkers alike. A similar pattern of reduced perception of effectiveness of strategies with direct personal impact occurs for males in comparison to females. These results suggest that directly focused alcohol control measures may be resisted by key target populations (binge drinkers and males) while broad-based, noninvasive efforts more readily evaded by these groups are more likely to be considered effective by them.

The findings are notable because strategies less often considered effective, particularly by binge drinkers and males in our sample, have been shown empirically to be among the most effective in reducing alcohol-related problems. As we have already noted, increases in alcohol taxes are significantly related both to reduced alcohol consumption and to rates of motor vehicle crashes (Cook, 1981, 1982; Holder and Blose, 1987; Moskowitz, 1989; Single, 1991). Increased law-enforcement measures such as sobriety checkpoints (Homel, 1988, 1990; Lacey et al., 1990; Ross, 1985, 1987; Zador et al., 1989) and administrative license revocation (Klein, 1989; Nichols and Ross, 1990; Zador et al., 1989) for alcohol-impaired driving have also produced significant declines in alcohol-related crashes. However, increased severity of punishment, particularly mandatory jail time, has tended to yield negative results (Jones et al., 1988; Klein, 1989; Ross and Voas, 1989; Ross et al., 1990). Since some skills needed for safe driving begin to deteriorate even at blood alcohol levels as low as 10 or 20 mg/dL (Moskowitz and Burns, 1990) and crash involvement risk increases meaningfully at 40 mg/dL (Moskowitz and Robinson, 1988; Zador et al., 1989) but the legal limit stands at 100 mg/dL, lowering the legal blood alcohol limit for drivers could significantly reduce alcohol-involved crashes. As we have already noted, however, school- and worksite-based prevention and education programs appear not to be particularly effective in reducing either alcohol consumption or its adverse outcomes (Moskowitz, 1989; Kinder et al., 1980; Shope et al., 1992; Schaps et al., 1986). Bans on alcohol advertising have likewise not been demonstrated to affect alcohol consumption (Smart, 1988).

The variables associated with reduced perceptions of effectiveness in our sample, namely, binge drinking, male gender, and, to a lesser degree, young age and single marital status, are similar to those identified by Jeffery et al. (1990) and Schmidt et al. (1990) as associated with reduced support for a range of alcohol control measures. Further, rates of expressed support for control measures in the surveys by Jeffery et al. (1990), Schmid et al. (1990), and

Hilton and Kaskutas (1991) were generally similar to or higher than the rates of perceived effectiveness in our survey.

Comparisons should be made cautiously because the relevant items were not worded identically across the three surveys. However, the similarities between the correlates of perceived effectiveness in our data and correlates of support in other studies represent further evidence that perceived effectiveness and support may be related constructs. Moreover, the similarities in patterns, along with the differences in the magnitudes, of perceived effectiveness of and support for various control measures across the respective surveys add to the evidence that measures of support may be inflated estimates of perceived effectiveness. If this is true, then perceived effectiveness may be a more accurate and useful gauge than support of community beliefs. It may also be a better predictor than support of a community's willingness to change and its potential contribution to prevention efforts.

Three major limitations of the study are that, while we have assessed perceived effectiveness of various alcohol control measures, we have not examined other relevant aspects of respondent attitudes, e.g., perceived acceptability of and reactions to the measures. We have determined which measures drinkers are more likely and less likely to regard as effective, and found that relationships between binge drinking and perceived effectiveness resemble those reported by others between binge drinking and support. We cannot, however, estimate with our data the effects of any of these strategies on the behavior of either binge or nonbinge drinkers. Second, additional respondent characteristics which might confound or modify the effects of associations between problem drinking and perceived effectiveness of control strategies, including antisocial behavior and other drug problems, were not assessed. Third, our data did not allow us to examine the social-psychological antecedents of respondents' perceptions concerning the effectiveness of the control measures, including their sources of knowledge as well as their views of the credibility of any messages they had received about these measures. The evaluation of future community prevention programs should include data from community residents on these factors and quantify their effects on respondents' attitudes, including perceived effectiveness and support, toward alcohol control measures.

Our results suggest the need for future research to assess in detail the interrelationships between perceived effectiveness, empirically demonstrated efficacy, drinking behavior, and support for a broad range of alcohol control measures. In particular, it would be desirable to identify strategies which have been empirically shown to be efficacious and which are broadly perceived to be effective by the public, especially, to the extent possible, targeted subpopulations of drinkers. It would also be of interest to identify means by which public support for and perceptions of the effectiveness of various control mea-

sures can be harnessed toward the goal of optimizing the actual efficacy of the interventions. As these public perceptions involve dynamic processes and are rarely static, intervention efforts based on such information need to be sufficiently flexible to accommodate to inevitable shifts in perceptions, planned and otherwise. Other implications of our results for future community prevention projects include, as suggested by Jeffery et al. (1990), the desirability of forming linkages with subgroups likely to be "natural allies" in advancing policy changes: females, older and married individuals, nondrinkers, and nonproblematic drinkers. An exploration of the costs and benefits of selecting control strategies broadly considered effective and/or supported by target communities and their subgroups versus selecting strategies empirically shown to be effective but not necessarily perceived as such or well supported by targeted populations is also indicated.

APPENDIX: THREE-COMMUNITY ALCOHOL AND HEALTH SURVEY

The following 27 pages reproduce the Rhode Island Community Survey Codebook.

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COVERSHEET NUMBER _____

INTERVIEWER _____

INTERVIEWER ID# _____

RHODE ISLAND COMMUNITY SURVEY

CODEBOOK

Center for Survey Research
University of Massachusetts-Boston

Winter, 1991

Confidential: No information shall be presented or published in any way that would permit identification of any individual.

Before we start, let me tell you a few things about this survey. The Center for Survey Research at the University of Massachusetts is conducting interviews with about 1000 residents of Rhode Island about drinking and driving behaviors. This information will help the Public Health Department to better understand the needs of people and to better plan health programs.

I want to assure you that your answers are completely confidential and will never be used in any way that could link them to you. They will be combined with other answers for statistical analysis.

Your participation in this study is, of course, voluntary.

It is important that you answer as completely and accurately as you can. If there is any question you would prefer not to answer, just tell me and we will go on to the next question.

Do you have any questions before we start?

1:1-4 RESNUM
1:5-12 CLID

TIME NOW: _____

SECTION A.

HEALTH AND MEDICAL CARE UTILIZATION

In this first section, I'll ask you some questions about your health.

A1. In general would you say your health is excellent, very good, good, fair, or poor?

1:13

1 EXCELLENT
2 VERY GOOD
3 GOOD
4 FAIR
5 POOR
9 NA

A2. During the past twelve months, how many times have you used a local hospital, emergency room, or emergency center for your own care?

:14-15

CODE # TIMES USED AN ER/EC
00 NO TIMES
99 NA

A3. During the past twelve months, how many different times have you been hospitalized as an in-patient for at least one night?

:16-17

CODE # TIMES HOSPITALIZED (NOT TOTAL # OF NIGHTS)
00 NO TIMES
99 NA

A4. During the past two weeks, have you seen or talked to a physician or other health care provider about a problem related to your health? Do not count routine checkups.

1:18

1 YES ------> A4a. How many times? CODE 2 DIGITS
2 NO (SKIP TO A5) 99 NA
9 NA 00 INAP

1:19-20

A5. On how many different days were you unable to work (and/or) carry out your usual activities due to health problems, injuries or accidents during the past two weeks?

1:21-22

CODE # DAYS
00 NO DAYS
99 NA

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A6. I am now going to read you a list of medical conditions. Please tell me whether or not you have ever had the condition. Have you ever had (READ A...)?

A7. Have you had or been treated for this condition within the past twelve months?

				YES	NO	NA	INAP
1:23							
	A6a. High blood pressure (hypertension)	[1] YES ----A7a>		[1]	[2]	9	0
:24		[2] NO					
		9 NA					
:25	A6b. Heart disease (including heart attack;	[1] YES ----A7b>		[1]	[2]	9	0
:26	heart failure; rapid heart; angina)	[2] NO					
		9 NA					
:27	A6c. Diabetes (high blood sugar)	[1] YES ----A7c>		[1]	[2]	9	0
:28		[2] NO					
		9 NA					
:29	A6d. Stroke or hemorrhage of the brain	[1] YES ----A7d>		[1]	[2]	9	0
:30		[2] NO					
		9 NA					
:31	A6e. Convulsions or seizures	[1] YES ----A7e>		[1]	[2]	9	0
:32		[2] NO					
		9 NA					
:33	A6f. Any disease of the pancreas	[1] YES ----A7f>		[1]	[2]	9	0
:34		[2] NO					
		9 NA					
:35	A6g. Arthritis or rheumatism	[1] YES ----A7g>		[1]	[2]	9	0
:36		[2] NO					
		9 NA					
:37	A6h. Hepatitis	[1] YES ----A7h>		[1]	[2]	9	0
:38		[2] NO					
		9 NA					
:39	A6i. Cancer	[1] YES ----A7i>		[1]	[2]	9	0
:40		[2] NO					
		9 NA					
:41	A6j. Any chronic stomach problems such as	[1] YES ----A7j>		[1]	[2]	9	0
:42	ulcer or gastrointestinal bleeding	[2] NO					
		9 NA					
:43	A6k. Any liver problems	[1] YES ----A7k>		[1]	[2]	9	0
:44		[2] NO					
		9 NA					
			(SKIP TO A10)		(ASK A8)		

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A8. Have you ever had (READ A...)?

			A9. Have you had or been treated for this condition within the past twelve months? YES	NO	INAP	NA
1:45 :46	A8a. Yellow jaundice	0 INAP [1] YES ---A9a.> [2] NO 9 NA	[1]	[2]	0	9
:47 :48	A8b. Fatty liver	0 INAP [1] YES ---A9b.> [2] NO 9 NA	[1]	[2]	0	9
:49 :50	A8c. Enlarged liver	0 INAP [1] YES ---A9c.> [2] NO 9 NA	[1]	[2]	0	9
:51 :52	A8d. Cirrhosis of the liver	0 INAP [1] YES ---A9d.> [2] NO 9 NA	[1]	[2]	0	9
:53 :54	A8e. Yellow jaundice	0 INAP [1] YES ---A9e.> [2] NO 9 NA	[1]	[2]	0	9

A10. I will read you a list of common problems which affect all of us from time to time. Thinking back over the past <u>two weeks</u>, have you been bothered by any of the following?

		YES	NO	NA
:55	A10a. Shortness of breath	[1]	[2]	9
:56	A10b. Insomnia or trouble sleeping	[1]	[2]	9
:57	A10c. Blackouts	[1]	[2]	9
:58	A10d. Anxiety or depression	[1]	[2]	9

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SECTION B

INJURIES

Now we'd like to know about any injuries you may have had in the past 12 months.

B1. Have you had any injuries requiring medical attention in the past 12 months? Do not count injuries from motor vehicle accidents if you were the driver.

			CODE 2 DIGITS
	1	YES Bla. How many injuries have you had?	
1:59	2	NO (SKIP TO SECTION C)	99 NA
:60-61	9	NA	00 INAP

B2. Thinking about the most recent injury, where did it occur?

:62-63

01. INSIDE YOUR OWN HOME
02. OUTSIDE OF YOUR HOME (YARD, DRIVEWAY, ETC.)
03. AT SOMEONE ELSE'S HOME
04. AT WORK
05. AT SCHOOL [INCLUDES PREMISES]
06. IN A PUBLIC BUILDING OTHER THAN SCHOOL
07. IN A MOTOR VEHICLE OR ON PUBLIC TRANSPORTATION
08. ON A STREET OR HIGHWAY
09. IN A PLACE OF RECREATION OR SPORTS
10. ON THE WATER OR AT THE BEACH OR WATERFRONT
11. CHRONIC CONDITION
88. SOME OTHER AREA
99 NA
00 INAP

B4. What type of injury was it? [CHECK ALL THAT APPLY.]

		INAP	YES	NO	NA
:64	B4a. BROKEN BONES	0	1	2	9
:65	B4b. HEAD INJURY	0	1	2	9
:66	B4c. CUT OR OPEN WOUND	0	1	2	9
:67	B4d. BRUISE	0	1	2	9
:68	B4e. SPRAIN	0	1	2	9
:69	B4f. BURN	0	1	2	9
:70	B4g. POISONING OR OVERDOSE	0	1	2	9
:71	B4h. OTHER (SPECIFY)	0	1	2	9
:72-73	B4h1. SPECIFY				

01 CHRONIC CONDITION
02 DISLOCATION
03 PULLED MUSCLE / MUSCULAR INJURY
04 BACK INJURIES
05 BODY PART INJURY, BUT SPECIFIC TYPE OF INJURY NOT GIVEN
88 OTHER (CARD)
99 NA
00 INAP

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B5. How long did this injury cause you to miss work or limit your normal activities? (PART OF A DAY COUNTS AS ONE DAY.)

1:74-76

CODE	# DAYS
000	NO DAYS
999	NA
777	INAP

B6. Did you go to a physician's office for the injury?

:77

1	YES
2	NO
9	NA
0	INAP

B7. Did you go to an emergency room for the injury?

:78

1	YES
2	NO
9	NA
0	INAP

B8. Were you admitted to a hospital as an inpatient for at least one night?

:79

1	YES
2	NO
9	NA
0	INAP

B9. Had you had anything alcoholic to drink during the 24 hours before the injury?

:80

1	YES
2	NO (SKIP TO SECTION C)
9	NA
0	INAP

B9a. How many drinks did you have in the 24 hours before the injury?

:81-82

CODE	# DRINKS
99	NA
00	INAP

1:83 EOR - MARK

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SECTION C.

2:1-4 RESNUM

SOCIAL CONTEXT OF DRINKING PRACTICES

Now I have some general questions about drinking alcoholic beverages.

C1. Have you ever been concerned because you felt someone in your family was drinking too much?

2:5

1 YES
2 NO (SKIP TO C2)
9 NA

C1a. Could you please tell me what that person's relationship was to you? (CHECK ALL THAT APPLY)

			INAP	YES	NO	NA
2:6	C1a1.	MOTHER	0	1	2	9
:7	C1a2.	FATHER	0	1	2	9
:8	C1a3.	SISTER	0	1	2	9
:9	C1a4.	BROTHER	0	1	2	9
:10	C1a5.	SON	0	1	2	9
:11	C1a6.	DAUGHTER	0	1	2	9
:12	C1a7.	HUSBAND OR WIFE	0	1	2	9
:13	C1a8.	STEP-PARENT/FOSTER PARENT	0	1	2	9
:14	C1a9.	OTHER RELATIVE (IN-LAWS, AUNTS, UNCLES, COUSINS, NIECES, NEPHEWS, ETC.)	0	1	2	9
:15	C1a10.	SELF	0	1	2	9

C2. In the past two weeks, have you attended a party or any kind of social gathering where alcoholic beverages were served?

2:16

1 YES
2 NO
9 NA

C3. In the past 12 months, were you in a situation in which you were with someone you knew and you were concerned because the person was drinking and driving?

:17

1 YES
2 NO (SKIP TO C5)
9 NA

C4. How many months ago was the most recent incident?

:18-19

CODE # MONTHS AGO
00 WITHIN THE PAST MONTH
99 NA
77 INAP

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C4a. What did you do?

2:20-21 (1ST MENTION)
2:22-23 (2ND MENTION, C4a1)

CODE 2 MENTIONS

01 TALK TO THE PERSON/ASK THE PERSON NOT TO DRIVE
02 DRIVE THE PERSON HOME (OR OFFER TO)
03 LET THE PERSON STAY OVERNIGHT (OR OFFER TO)
04 CALL A TAXI (OR OFFER TO)
05 GIVE THE PERSON COFFEE OR FOOD (OR OFFER TO)
06 TAKE THE CAR KEYS AWAY FROM HIM/HER (OR TRY TO)
07 PHYSICALLY RESTRAIN THE PERSON (OR TRY TO)
08 THREATEN TO CALL THE POLICE
09 NOTHING
10 GET SOMEONE ELSE TO TAKE PERSON HOME
11 TRY TO SOBER THE PERSON UP - NO SPECIFIC ACTIONS MENTIONED (LOW PRIORITY)
12 STOPPED THEM FROM DRIVING HOME, BUT NO SPECIFIC ACTIONS MENTIONED
88 OTHER (CARD)
99 NA
00 INAP

C5. On the average, do you drink alcoholic beverages, daily, at least once a week, at least once a month, less than once a month, or not at all?

2:24

1 DAILY
2 AT LEAST ONCE A WEEK
3 AT LEAST ONCE A MONTH
4 LESS THAN ONCE A MONTH

DRINKS NOW

(SKIP TO C8)

5 NOT AT ALL

DOESN'T DRINK NOW

9 NA

C6. Have you ever drunk any alcoholic beverages?

2:25

1 YES
2 NO - NEVER DRANK
9 NA
0 INAP

CODER CHECK: ARE YOU SURE?

Y YES
N NO

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C7. Are there any particular reasons you don't drink now? (What are they?)

2:26-27 (1ST MENTION) = C7 CODE 2 MENTIONS
2:28-29 (2ND MENTION) = C7a.

	01	I'VE NEVER DRUNK IN MY LIFE
	02	RELIGIOUS/MORAL REASONS/DON'T BELIVE IN IT/ BROUGHT UP NOT TO DRINK
	03	FOR DIET/HEALTH REASONS
	04	(FAMILY) PROBLEMS CAUSED BY OTHERS WHO DRINK
	05	PERSONAL/FAMILY/JOB/SCHOOL PROBLEMS BY OWN DRINKING
	06	I'M AN ALCOHOLIC/DRINKING PROBLEM/NEED TO STOP DRINKING/SPEINDING TOO MUCH TIME DRINKING/JOINED AA
	07	SOCIAL/PEER/FAMILY PRESSURE/ OTHER SOCIAL CIRCUMSTANCES/ OTHERS DON'T DRINK
	08	PERSONAL PREFERENCE/DON'T LIKE THE TASTE/DIDN'T DRINK MUCH AND DECIDED TO QUIT / DOESN'T LIKE WHAT IT DOES TO ME, E.G. OUT OF CONTROL
	09	TOO EXPENSIVE TO DRINK/TOO MUCH MONEY
	10	PREGNANT
	11	NO REASON, OR WHEN RESPONSE INDICATES THAT THE RESPONDENT HAS NO SPECIFIC REASON AS TO WHY HE/SHE DOESN'T DRINK
	88	OTHER (CARD)
	99	NA
	00	INAP

SKIP TO C28

C8. Considering all types of alcoholic beverages, did you have five or more drinks at any one time, during the past 12 months?

	0	INAP
	1	YES
2:30	2	NO (SKIP TO C9)
	9	NA

C8a. How many months ago was the most recent time?

	CODE #	MONTHS AGO
	00	WITHIN THE PAST MONTH
2:31-32	99	NA
	77	INAP

C9. Have you had any alcoholic beverages such as beer, wine, liquor, cocktails, or wine coolers during the past two weeks?

	0	INAP
2:33	1	YES DRANK LAST 2 WEEKS
	2	NO (SKIP TO C19) DIDN'T DRINK LAST 2 WEEKS
	9	NA

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C10. During the past two weeks, on how many days have you had any beer?

CODE # DAYS
00 NO DAYS (SKIP TO C12)
2:34-35 99 NA
77 INAP

C11. On the days when you drank beer, about how many beers did you drink on the average?

CODE # BEERS
99 NA
2:36-37 00 INAP

C12. During the past two weeks, on how many days have you had any wine coolers, such as Bartles and James, Sun Country Cooler, or Sangria Cooler?

CODE # DAYS
00 NO DAYS (SKIP TO C14)
2:38-39 99 NA
77 INAP

C13. On the days when you drank wine coolers, about how many wine coolers did you drink on the average?

CODE # WINE COOLERS
99 NA
2:40-41 00 INAP

C14. During the past two weeks, on how many days have you had any wine?

CODE # DAYS
2:42-43 00 NO DAYS
99 NA
77 INAP

C15. On the days when you drank wine, about how many glasses of wine did you drink on the average?

CODE # GLASSES
99 NA
2:44-45 00 INAP

C362 (Code) 3/5/91

C16. During the past two weeks, on how many days have you had any liquor, mixed drinks, or liqueur (such as vodka, gin, whiskey or Kahlua)?

2:46-47

CODE # DAYS
00 NO DAYS
99 NA
77 INAP

C17. On the days when you drank liquor, mixed drinks or liqueur, about how many drinks did you have on the average?

CODE # DRINKS
2:48-49 99 NA
00 INAP

C18. At which of the following locations have you had any alcohol to drink in the past two weeks? In the past 2 weeks have you had any alcohol to drink (READ EACH)?

		YES	NO	NA	INAP
2:50	a. In your own home	[1]	[2]	9	0
:51	b. In someone else's home	[1]	[2]	9	0
:52	c. At a private club or function hall	[1]	[2]	9	0
:53	d. At work	[1]	[2]	9	0
:54	e. In a restaurant, bar, or cocktail lounge	[1]	[2]	9	0
:55	f. On a boat or at the beach	[1]	[2]	9	0
:56	g. In an airplane or train	[1]	[2]	9	0
:57	h. In an automobile	[1]	[2]	9	0
:58	i. At a sports event such as a ball game	[1]	[2]	9	0
:59	j. At any other outdoor recreational area	[1]	[2]	9	0
:60	k. At any other places	[1]	[2]	9	0

C18k1. SPECIFY

2:61-62

88 OTHER (CARD)
99 NA
00 INAP

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C19. In the <u>past 12 months</u> did you have anything alcoholic to drink at a bar, club or restaurant in TOWN ON LABEL ?

2:63

1 YES
2 NO (SKIP TO C28)
9 NA
0 INAP

Now I am going to ask you a series of questions about your experiences in the past 12 months while drinking in bars, clubs, and restaurants where alcohol is served in [TOWN ON LABEL-Woonsocket / Newport / Westerly].

C20. Were you ever asked who is doing the driving?

:64

1 YES
2 NO
9 NA
0 INAP

C21. Did you ever hear anyone else asked about who is doing the driving?

:65

1 YES
2 NO
9 NA
0 INAP

C22. After ordering a drink, have you ever been offered food or something non-alcoholic as a substitute?

:66

1 YES
2 NO
9 NA
0 INAP

C23. Did you ever see someone else offered food or something non-alcoholic as a substitute after ordering a drink?

:67

1 YES
2 NO
9 NA
0 INAP

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C24. Remember we are talking about the past 12 months, in bars, clubs. or restaurants in TOWN ON LABEL
Did a bartender or server ever refuse to serve you a drink?

:68

1 YES
2 NO
9 NA
0 INAP

C25. Did you ever seen someone else refused a drink?

:69

1 YES
2 NO
9 NA
0 INAP

C26. Did anyone in your group have his or her age checked?

:70

1 YES
2 NO
9 NA
0 INAP

C27. Did you ever seen anyone else have his or her age checked?

:71

1 YES
2 NO
9 NA
0 INAP

C28. How often in the past 12 months did you go to a bar, club or restaurant where alcohol is served in TOWN ON LABEL
-- would you say never, less than once a month, once or twice a month, once a week, or more than once a week?

:72

1 NEVER (SKIP TO SECTION D)
2 LESS THAN ONCE A MONTH
3 ONCE OR TWICE A MONTH
4 ONCE A WEEK
5 MORE THAN ONCE A WEEK
9 NA

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C29. When you went, how often did you see someone who appeared to have had too much to drink -- would you say never, rarely, some of the time, most of the time, or all of the time?

:73

1 NEVER
2 RARELY
3 SOME OF THE TIME
4 MOST OF THE TIME
5 ALL OF THE TIME
9 NA
0 INAP

2:74 EOR MARK

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3:1-4 RESNUM

SECTION D.

DRINKING AND DRIVING

Now, I have some questions about driving habits.

D1. When you are driving or riding in a car, about how often do you fasten your seatbelt -- would you say never, rarely, some of the time, most of the time, all of the time, or something else?

3:5

3

1. NEVER
2. RARELY
3. SOME OF THE TIME
4. MOST OF THE TIME
5. ALL OF THE TIME
6. SOMETHING ELSE (CARD)

7. R DOESN'T DRIVE (SKIP TO SECTION E)

8. R DOESN'T RIDE (SKIP TO SECTION E)
9. NA

D2. Approximately how many miles have you personally driven a car, truck, motorcycle, or any other motor vehicle during the past 12 months - 1 to 10,000 miles, 10,000 to 20,000 miles, 20,000 to 30,000 miles or more than 30,000 miles?

3:6

0 NO MILES (SKIP TO E1)
1 1 - 10,000 MILES
2 10,001-20,000 MILES
3 20,001-30,000 MILES
4 MORE THAN 30,000 MILES
7 INAP
9 NA

D3. This next question is about traffic accidents. In the past 12 months, how many traffic accidents, of any type, have you been in where you were driving?

3:7-8

CODE NUMBER OF ACCIDENTS
00 NONE (SKIP TO D5)
99 NA
77 INAP

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D4. I'd like to ask you a few questions about the (most recent) accident.

		YES	NO	NA	INAP
3:9	D4a. Were you hurt seriously enough to see a doctor?	[1]	[2]	9	0
:10	D4b. Was anyone else hurt seriously enough to see a doctor?	[1]	[2]	9	0
:11	D4c. Were you wearing a seatbelt at the time?	[1]	[2]	9	0
:12	D4d. Did you have anything alcoholic to drink during the 24 hours before the accident?	[1]	[2]	9	0 [SKIP TO D5]
:13	D4e. Was it within 4 hours before the accident?	[1]	[2]	9	0

D5. INTERVIEWER CHECK: **SEE C9**, PAGE 9

3:14 R DRANK IN PAST 2 WEEKS:

1 - YES (CONTINUE)
2 NO (SKIP TO D7)
9 NA
0 INAP

D6. In the past two weeks, how many times did you drive after you had any alcohol to drink, that is within four hours after drinking alcohol?

3:15-16

CODE # TIMES
00 NO DAYS (SKIP TO D8)
99 NA
77 INAP

D6a. How many of these times did you drive after you had five or more drinks?

3:17-18

CODE # TIMES
00 NO DAYS (SKIP TO D8)
99 NA
77 INAP

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D7. INTERVIEWER CHECK: **SEE C5**, PAGE 8

3:19

1 R IS A NON-DRINKER (SKIP TO SECTION E)
2 R IS DRINKER; (CONTINUE)
9 NA
0 INAP

D8. If you and another person or other people are driving to a place where you will be drinking, how likely are you to agree ahead of time that one of you will limit your drinking and have that person drive home? Are you not at all likely, somewhat likely, very likely, or extremely likely to do this?

3:20

1 NOT AT ALL LIKELY
2 SOMEWHAT LIKELY
3 VERY LIKELY
4 EXTREMELY LIKELY
9 NA
0 INAP

D9. When you have been drinking, has a friend ever asked you not to drive?

3:21

1 YES
2 NO
9 NA
0 INAP

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SECTION E.

COMMUNITY PROBLEMS RELATED TO DRINKING

E1. We'd like to know how concerned you are about different problems specifically related to drinking in your community. For each of the following problems, please tell me whether you are concerned or not about it in your community. Are you concerned or not concerned about (READ A...) in your community?

		YES, CONCERNED	NO, NOT CONCERNED	NA
3:22	E1a. drunk driving	[1]	[2]	9
:23	E1b. the number of liquor stores and bars	[1]	[2]	9
:24	E1c. teenagers drinking	[1]	[2]	9
:25	E1d. alcoholic beverage containers thrown into streets and yards	[1]	[2]	9
:26	E1e. people standing around in groups and drinking in public places like parks or street corners	[1]	[2]	9
:27	E1f. accidents and deaths due to drinking in your community	[1]	[2]	9
:28	E1g. inadequate law enforcement of drunk driving laws in your community	[1]	[2]	9

3:29 E2. Can you name an organization whose purpose is to reduce drunk driving?

1 YES ----> E2a. What is it?
2 NO (SKIP TO F1)
9 NA

3:30-31 (E2a1: 1st MENTION)
:32-33 (E2a2: 2nd MENTION)

CODE 2 MENTIONS

01 MADD
02 SADD
03 SAIVE
04 AA / ALANON
05 POLICE DEPT
06 NAVY
07 AAA
08 OTHER "ADD' e.g. TADD, Etc
09 TREATMENT CTRS
10 DARE
88 OTHER (CARD)
99 NA
00 INAP

(NOTE: IF THERE ARE NOT 2 MENTIONS IN E2a, USE E3a TO CODE SECOND MENTION)

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SECTION F.

ATTITUDES AND KNOWLEDGE

F1. I am going to read some statements. For each, please tell me whether you think it is true or false. (READ A...) (Is that true or false?)

		TRUE	FALSE	NA
3:34	F1a. First, the police department in your community has gone to great lengths to reduce drunk driving.	[1]	[2]	9
:35	F1b. Bartenders and alcohol servers in your community do not try to prevent their customers from driving when intoxicated.	[1]	[2]	9
:36	F1c. Liquor stores in your community do not try to prevent their customers from driving when intoxicated.	[1]	[2]	9
:37	F1d. Bartenders and servers in your community usually try to prevent their customers from getting intoxicated on the premises.	[1]	[2]	9
:38	F1e. The police department in your community does not do enough about reducing drunk driving.	[1]	[2]	9
:39	F1f. Bartenders and servers in your community do nothing to prevent their customers from getting drunk.	[1]	[2]	9
:40	F1g. During the last several years, police in your community have been involved in a special campaign to reduce drunk driving.	[1]	[2]	9
:41	F1h. During the last several years, bartenders and servers in your community have been involved in a special campaign to reduce intoxication and drunk driving.	[1]	[2]	9
:42	F1i. During the last several years, liquor stores in your community have been involved in a special campaign to reduce intoxication and drunk driving.	[1]	[2]	9
3:43	EOR MARK			

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4:1-4 RESNUM

F2. I am going to read some suggestions that people have made about ways to reduce problems resulting from drinking. For each suggestion, please tell me whether you think it would be effective or not effective. (READ A...) (Do you think that would be effective or not effective in reducing problems?)

		EFFECTIVE	NOT EFFECTIVE	NA
4:5	F2a. First, making alcohol more expensive by increasing alcohol taxes	[1]	[2]	9
:6	F2b. (What about) increasing the penalties or enforcement for driving while under the influence of alcohol	[1]	[2]	9
:7	F2c. setting up police roadblocks to identify drunk drivers	[1]	[2]	9
:8	F2d. training bartenders and waiters to limit the number of drinks served to customers	[1]	[2]	9
:9	F2e. increasing alcohol prevention programs in schools	[1]	[2]	9
:10	F2f. increasing alcohol prevention programs in work places	[1]	[2]	9
:11	F2g. requiring health warnings on all advertising of alcoholic beverages	[1]	[2]	9
:12	F2h. putting stronger warning messages on alcoholic beverage containers	[1]	[2]	9
:13	F2i. prohibiting all advertising of beer, wine, liquor, or wine coolers	[1]	[2]	9
:14	F2j. promoting and encouraging use of non-alcoholic beverages instead of alcoholic ones	[1]	[2]	9
:15	F2k. Please tell me any other ideas you may have which might help reduce problems related to alcohol in your community.			

1 TEXT WRITTEN
2 NO TEXT WRITTEN
9 NA

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F2k1. SPECIFY

CODE 2 MENTIONS

4:16-17(1st MEN) (=F2k1)
:18-19(2nd MEN) (=F2k2)

01	INCREASE EDUCATION & AWARENESS AMONG CHILDREN AT GRADE/HIGH SCHOOL LEVEL
02	LIMIT NUMBER OF DRINKS SERVED TO A PERSON IN BARS
03	HAVE BREATH ANALYZER TESTS AT BARS
04	JOIN ORGANIZATIONS THAT MEET REGULARLY ABOUT ALCOHOL ISSUES
05	HAVE MORE NON-ALCOHOLIC ACTIVITIES
06	LIMIT NUMBER OF HOURS LIQUOR STORES/BARS SHOULD BE OPEN
07	LIQUOR STORES/BARS SHOULD REQUIRE 2 IDs
08	INCREASE PENALTIES/PUNISHMENTS/FINES
09	INCREASE PUBLIC AWARENESS/MEDIA PROGRAMS
10	INCREASE ENFORCEMENT
11	HAVE PEOPLE WITH BAD EXPERIENCES WITH ALCOHOL SPEAK ABOUT THEIR EXPERIENCES
12	LIMIT NUMBER OF LIQUOR STORES/BARS IN ONE AREA/ LIMIT LIQUOR LICENSES
13	PARENT SHOULD TEACH THEIR CHILDREN ABOUT ALCOHOL
14	MORE TREATMENT FOR ALCOHOLISM AVAILABLE/ MORE AFFORDABLE
15	KEEP PUBLIC TRANSPORTATION OPEN LATER SO PEOPLE WON'T DRIVE
16	LIMIT / PROHIBIT ALL OTHER ADVERTISEMENTS, SCREENS / LIMITS/ PROHIBIT ADS THAT GLAMORIZE OR CLORIFY LIQUOR
17	SUPPORT ORGANIZATIONS DEDICATED TO REDUCING DRUNK DRIVING LIKE MADD, BUT NO SPECIFIC ACTION GIVEN
18	RAISE DRINKING AGE
19	SET UP ROADBLOCKS
88	OTHER (CARD)
99	NA
00	INAP

F3. Right now the level of blood alcohol that counts as driving while intoxicated is .10 (POINT ONE ZERO). Do you think lowering the amount of alcohol that drivers can legally have in their blood stream would be effective or not effective in reducing problems from drinking?

4:20

1 EFFECTIVE
2 NOT EFFECTIVE
9 NA

F4. Have you ever been through a roadblock set up to identify drunk drivers?

4:21

1 YES
2 NO
9 NA

F5. Would you object to being stopped for such a roadblock?

4:22

1 YES
2 NO
9 NA

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F6. INTERVIEWER CHECK: **SEE C5 AND C6**, PAGE 8

4:23

1 R HAS DRUNK ALCOHOL

2 R HAS NEVER DRUNK ALCOHOL (SKIP TO F8)

9 NA

F7. I'm now going to ask you some questions about personal experiences you may have had when drinking.

		YES	NO	INAP	NA
4:24	F7a. Did your drinking ever cause you to have an accident or injury of any kind?	[1]	[2]	0	9
:25	F7b. Have you ever been arrested for drunk driving?	[1]	[2]	0	9
:26	F7c. Have you ever been arrested because of anything connected with your drinking alcohol (aside from drunk driving arrests)?	[1]	[2]	0	9
:27	F7d. Have you ever lost or quit a job because of your drinking alcohol?	[1]	[2]	0	9
:28	F7e. Have you ever lost a close friendship because of your drinking alcohol?	[1]	[2]	0	9
:29	F7f. Has your drinking alcohol ever been a cause of trouble in your household?	[1]	[2]	0	9
:30	F7g. Have you ever been separated or divorced because of your drinking alcohol?	[1]	[2]	0	9
:31	F7h. Have you ever gotten into arguments or fights while drinking alcohol?	[1]	[2]	0	9

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F8. I'm going to read some statements that are sometimes made by people concerning alcohol. Please tell me whether you think each of the following statements is true or false. (READ EACH)... Would you say that is true or false?

		TRUE	FALSE	NA
4:32	F8a. Alcohol is a drug.	[1]	[2]	9
:33	F8b. The caffeine in a couple of cups of strong coffee will help sober a person up.	[1]	[2]	9
:34	F8c. A 12-ounce can of beer has about the same amount of alcohol in it as a shot of 86 proof whiskey.	[1]	[2]	9
:35	F8d. Many serious diseases are related to drinking too much alcohol.	[1]	[2]	9
:36	F8e. One wine cooler has about as much alcohol as a 12-oz beer.	[1]	[2]	9
:37	F8f. Alcohol is the substance most often involved in all types of accidents.	[1]	[2]	9
:38	F8g. All first offenders convicted of drunk driving in Rhode Island lose their driver's license for 3 to 6 months.	[1]	[2]	9
:39	F8h. It's against the law in Rhode Island for a bartender or liquor store clerk to sell alcoholic beverages to someone who is drunk.	[1]	[2]	9
:40	F8i. Alcohol is a depressant.	[1]	[2]	9

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SECTION G.

HOUSEHOLD RESIDENCE BACKGROUND

Finally, I have some questions about your background.

G1. INTERVIEWER CHECK: R'S SEX

4:41

1 MALE
2 FEMALE
9 NA

G2. How many years have you lived in IOWN ON LABEL ?

CODE # YEARS
:42-43 00 LESS THAN 1 YEAR
99 NA

G3. Do you expect to reside in this community two years from now?

1 YES
:44 2 NO
7 DON'T KNOW
9 NA

G4. What is your current marital status -- never married, married and living with your spouse, separated, divorced, or widowed?

1 NEVER MARRIED
2 MARRIED, LIVING WITH SPOUSE (THO SPOUSE MAY BE AWAY)
:45 3 SEPARATED
4 DIVORCED
5 WIDOWED
9 NA

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G5. What is the highest level or grade in school that you completed?

CODE EXACT GRADE

4:46-47

12 HIGH SCHOOL GRADUATE
13 POST HIGH SCHOOL - TRADE OR TECHNICAL SCHOOL
14 1 - 3 YEARS OF COLLEGE
15 COLLEGE GRADUATE
16 GRADUATE WORK, HIGHER DEGREE
88 OTHER
99 NA

G6. What is your date of birth?

CODE YR/MO/DAY

:48-53

999999 NA

G7. What were you doing for most of the past 12 months -- working at a job for pay, going to school, or something else?

1 WORKING AT A JOB FOR PAY (SKIP TO G9)
:54 2 GOING TO SCHOOL (SKIP TO G8)
8 SOMETHING ELSE
9 NA

G7a. What were you doing - Have you been laid off, retired, ill, keeping house, looking for work, disabled, or something else?

			YES	NO	NA	INAP
:55	G7a1	LAID OFF	1	2	9	0
:56	G7a2	RETIRED	1	2	9	0
:57	G7a3	ILL	1	2	9	0
:58	G7a4	KEEPING HOUSE	1	2	9	0
:59	G7a5	LOOKING FOR WORK	1	2	9	0
:60	G7a6	DISABLED	1	2	9	0
:61	G7a7	SOMETHING ELSE	1	2	9	0
:62-63	G7A71.	SPECIFY	88 OTHER (CARD)			
			99 NA			
			00 INAP			

G8. Did you work at a job or business at any time in the past 12 months?

1 YES
4:64 2 NO (SKIP TO G10)
9 NA
0 INAP

G9. Were you working full time -- 35 hours or more a week -- or part time -- less than 35 hours a week?

1 FULL TIME
:65 2 PART TIME
9 NA
0 INAP

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G10. What is your (current/most recent) occupation? (PROBE: What kind of work do/did you do?)
[IF R HAS MORE THAN ONE JOB, ASK FOR PRIMARY JOB.]

4:66

1 PROFESSIONAL
2 MANAGERIAL
3 CLERICAL
4 SALES
5 SKILLED BLUE COLLAR
6 SEMI-SKILLED BLUE COLLAR
8 OTHER
9 NA
0 INAP/R NEVER WORKED

G10A. Was your total family income before taxes in 1990 more or less than $25,000?

4:67-68

05 LESS 06 MORE

Was it more than $15,000?

03 NO 04 YES (SKIP TO END)

Was it more than $50,000?

09 NO 10 YES

Was it more than $10,000?

01 NO 02 YES

More than $35,000?

07 NO 08 YES

More than $80,000

11 NO 12 YES

01 LESS THAN $10,000
02 $10,001 - $15,000
03 LESS THAN $15,000
04 MORE THAN $15,000
05 LESS THAN $25,000
06 MORE THAN $25,000
07 LESS THAN $35,000
08 $35,001 - $50,000
09 LESS THAN $50,000
10 MORE THAN $50,000
11 $50,001 - $80,000
12 MORE THAN $80,000

G11. Just one final question. Are there any other telephone numbers in your home I could have called to reach you in addition to this one?

4:69

1 YES G11a. How many including this one? CODE #
2 NO 9 NA
9 NA 0 INAP

4:70

4:71 EOR MARK

ACKNOWLEDGMENTS

This research was supported by Grant R01 AA08277, National Institute on Alcohol Abuse and Alcoholism. The authors express their appreciation to William J. Waters Jr., Robert L. Stout, Henry Wechsler, Nancy Isaac, and Mary Speare for their comments on earlier drafts of this paper. Isolde Birdthistle made many valuable contributions to the final version. Arturo Cervantes, France Chaput, Magda Tisza, Mary Rojas, and Geoffrey Warner assisted with translations.

REFERENCES

COOK, P. J. (1981). The effect of liquor taxes on drinking, cirrhosis and auto accidents. In M. H. Moore and D. R. Gerstein (Eds.), *Alcohol and Public Policy: Beyond the Shadow of Prohibition*. Washington, D.C.: National Academy Press, pp. 255–285.

COOK, P. J. (1982). Alcohol taxes as a public health measure. *Br. J. Addict.* 77: 245–250.

COOK, P. J., and TAUCHEN, G. (1982). The effect of liquor taxes on heavy drinking. *Bell J. Econ.* 13: 379–390.

DANIEL, W. W. (1995). *Biostatistics*, 6th ed. New York, NY: Wiley.

DOOB, L. W. (1966). *Public Opinion and Propaganda*. Hamden, CT: Archon Books.

HARRINGTON, C. R., PUTNAM, S. L., WATERS, W. J., and COLT, A. M. (1989). The community gatekeeper training model for reducing alcohol abuse and alcohol-related injury. *R. I. Med. J.* 72: 459–463.

HILTON, M. E., and KASKUTAS, L. A. (1991). Public support for warning labels on alcoholic beverage containers. *Br. J. Addict.* 86: 1323–1333.

HOLDER, H. D., and BLOSE, J. O. (1987). Reduction of community alcohol problems: Computer simulation experiments in three counties. *J. Stud. Alcohol* 48: 124–135.

HOMEL, R. (1988). *Policing and Punishing the Drinking Driver: A Study of General and Specific Deterrence*. New York, NY: Springer-Verlag.

HOMEL, R. (1990). Random breath testing and random stopping programs in Australia. In R. J. Wilson and R. Mann (Eds.), *Drinking and Driving: Advances in Research and Prevention*. New York, NY: Guilford Press, pp. 159–204.

HOSMER, D. W., and LEMESHOW, S. (1989). *Applied Logistic Regression*. New York, NY: Wiley.

HOWARD-PITNEY, B., JOHNSON, M. D., ALTMAN, D. G., HOPKINS, R., and HAMMOND, N. (1991). Responsible alcohol service: A study of server, manager, and environmental impact. *Am. J. Public Health* 81: 197–199.

JEFFERY, R. W., FORSTER, J. L., SCHMID, T. L., McBRIDE, C. M., ROONEY, B. L., and PIRIE, P. L. (1990). Community attitudes toward public policies to control alcohol, tobacco, and high-fat food consumption. *Am. J. Prev. Med.* 6: 12–19.

JOHNSTON, L. D., O'MALLEY, P. M., and BACHMAN, J. G. (1991). *Drug Use among American High School Seniors, College Students, and Young Adults, 1975–1990. Vol. 2* (DHHS Publication ADM91-1835). Washington, D.C.: Government Printing Office.

JONES, R., JOKSCH, H., LACEY, J., and SCHMIDT, H. (1988). *Field Evaluation of Jail Sanctions for DWI: Technical Report*. Washington, D.C.: National Highway Traffic Safety Administration.

KASKUTAS, L. A. (1992). *Differential Perceptions of Policy Effectiveness*. Paper presented at the Annual Meeting of the American Public Health Association, November 8–12, Washington, D.C.

KATZ, E., and LAZARSFELD, P. (1955). *Personal Influence*. Glencoe, IL: Free Press.

KINDER, B. N., PAPE, N. E., and WALFISH, S. (1980). Drug and alcohol education programs: A review of outcome studies. *Int. J. Addict.* 15: 1035–1054.

KISH, L (1965). *Survey Sampling*. New York, NY: Wiley.

KLEIN, T. (1989). *Changes in Alcohol-Involved Fatal Crashes Associated with Tougher State Alcohol Legislation: Technical Report*. Washington, D.C.: National Highway Traffic Safety Administration.

LACEY, J., MARCHETTI, L., STEWART, R., MURPHY, P., and JONES, R. (1990). *Combining Enforcement and Information to Deter DWI: The Experience of Three Communities*. Chapel Hill, NC: Highway Safety Research Center, University of North Carolina.

McCAUL, M., and FURST, J. (1994). Alcoholism treatment in the United States. *Alcohol Health Res. World* 18: 253–260.

McGUIRE, W. J. (1981). Theoretical foundations of campaigns. In R. E. Rice and W. J. Paisley (Eds.), *Public Communication Campaigns*. Beverly Hills, CA: Sage Publications, pp. 41–70.

MOSKOWITZ, H., and BURNS, M. (1990). Effects of alcohol on driving performance. *Alcohol Health Res. World* 14: 12–14.

MOSKOWITZ, H., and ROBINSON, C. (1988). *Effects of Low Doses of Alcohol on Driving-Related Skills: A Review of the Evidence: Technical Report*. Washington, D.C.: National Highway Traffic Safety Administration.

MOSKOWITZ, J. M. (1989). The primary prevention of alcohol problems: A critical review of the literature. *J. Stud. Alcohol* 50: 54–88.

NATIONAL CENTER FOR HEALTH STATISTICS (1994). *Health, United States, 1993* [DHHS Pub. (PHS) 94-1232]. Hyattsville, MD: US Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention.

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION (1994). *Traffic Safety Facts 1993: Alcohol*. Washington, D.C.: US Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis.

NICHOLS, J., and ROSS, H. L. (1990). The effectiveness of legal sanctions in dealing with drinking drivers. *Alcohol, Drugs, Driving* 6: 33–60.

PERLOFF, R. M. (1993). *The Dynamics of Persuasion*. Hillsdale, NJ: Lawrence Erlbaum Associates.

PHELPS, C. E. (1984). Alcohol taxes and highway safety. In J. D. Graham (Ed.), *Preventing Automobile Injury: New Findings from Evaluation Research*. Dover, MA: Auburn House Publishing Company, pp. 197–230.

PRESLEY, C. A., MEILMAN, P. W., and LYERLA, R. (1993). *Alcohol and Drugs on American College Campuses: Use, Consequences, and Perceptions of the Campus Environment*. Carbondale, IL: The Core Institute, Student Health Program, Southern Illinois University–Carbondale.

RHODE ISLAND DEPARTMENT OF HEALTH (1989). *Final Report of the Rhode Island Community Alcohol Abuse and Injury Prevention Project, Vol. 1, Description and Process Evaluation,* and *Vol. II, Statistical Outcome Evaluation*. Providence, RI: Rhode Island Department of Health.

ROSS, H. L. (1985). Deterring drunken driving: An analysis of current efforts. *J. Stud. Alcohol* 10(Suppl.): 122–128.

ROSS, H. L. (1987). Britain's Christmas crusade against drinking and driving. *J. Stud. Alcohol* 48: 476–482.

ROSS, H. L. (1992). *Confronting Drunk Driving; Social Policy for Saving Lives*. New Haven, CT: Yale University Press, 1992.

ROSS, H. L., McCLEARY, R., and LaFREE, G. (1990). Can the threat of jail deter drunk drivers? The Arizona case. *J. Crim. Law Criminol.* 81: 156–170.

ROSS, H. L., and VOAS, R. B. (1989). *The New Philadelphia Story: The Effects of Severe Punishment for Drunk Driving*. Washington, D.C.: AAA Foundation for Traffic Safety.

ROTHMAN, J. (1979). Three models of community organization practice. In F. M. Cox, J. L. Erlich, J. Rothman, and J. E. Tropman (Eds.), *Strategies of Community Organization*. Itasca, IL: F. E. Peacock, pp. 86–102.

RUSS, N., and GELLER, E. (1987). Training bar personnel to prevent drunken driving: A field evaluation. *Am. J. Public Health* 77: 952–954.

SAFFER, H., and GROSSMAN, M. (1987). Beer taxes, the legal drinking age, and youth motor vehicle fatalities. *J. Leg. Stud.* 16: 351–374.

SALTZ, R. (1987). The roles of bars and restaurants in preventing alcohol-impaired driving: An evaluation of a server intervention. *Eval. Health Prof.* 10: 5–27.

SCHAPS, E., MOSKOWITZ, J. M., MALVIN, J. H., and SCHAEFFER, G. A. (1986). Evaluation of seven school-based prevention programs: A final report on the Napa Project. *Int. J. Addict.* 21: 1081–1112.

SCHMID, T. L., JEFFERY, R. W., FORSTER, J. L., ROONEY, B., KLEPP, K.-I., and McBRIDE, C. (1990). Public support for policy initiatives regulating alcohol use in Minnesota: A multi-community survey. *J. Stud. Alcohol* 51: 438–442.

SHOPE, J. T., DIELMAN, T. E., BUTCHART, A. T., CAMPANELLI, P. C., and KLOSKA, D. D. (1992). An elementary school-based alcohol misuse prevention program: A follow-up evaluation. *J. Stud. Alcohol* 53: 106–121.

SINGLE, E. (1991). The availability theory of alcohol-related problems. In C. Chaudron and D. Wilkinson (Eds.), *Theories on Alcoholism*. Toronto: Addiction Research Foundation, pp. 325–352.

SMART, R. G. (1988). Does alcohol advertising affect overall consumption? A review of empirical studies. *J. Stud. Alcohol* 49: 314–323.

UNGERLEIDER, S., and BLOCH, S. A. (1988). Perceived effectiveness of drinking-driving countermeasures: An evaluation of MADD. *J. Stud. Alcohol* 49: 191–195.

US BUREAU OF THE CENSUS (1980). *1980 Census of Population*. Washington, D.C.: US Department of Commerce, Bureau of the Census.

US DEPARTMENT OF HEALTH AND HUMAN SERVICES (1990). *Seventh Special Report to the U.S. Congress on Alcohol and Health*. Washington, D.C.: Department of Health and Human Services.

WAGENAAR, A. C., and STREFF, F. M. (1990). Public opinion on alcohol policies. *J. Public Health Policy* 11: 189–205.

WECHSLER, H., DAVENPORT, A., DOWDALL, G., MOEYKENS, B. A., and CASTILLO, S. (1994). Health and behavioral consequences of binge drinking in college: A national survey of students at 140 campuses. *JAMA* 272: 1672–1677.

WECHSLER, H., and ISAAC, N. (1992). "Binge" drinking at Massachusetts colleges: Prevalence, drinking styles, time trends, and associated problems. *JAMA* 267: 2929–2931.

WECHSLER, H., MOEYKENS, B., DAVENPORT, A., CASTILLO, S., and HANSEN, J. (1995). The adverse impact of heavy episodic drinkers on other college students. *J. Stud. Alcohol* 56: 628–634.

WORLD HEALTH ORGANIZATION (1994). *Alcohol Policy and the Public Good*. London: Oxford University Press.

ZADOR, P., LUND, A., FIELDS, M., and WEINBERG, K. (1989). Fatal crash involvement and laws against alcohol-impaired driving. *J. Public Health Policy* 10: 467–485.

RESUMEN

Este estudio evalúo las percepciones de un grupo de adultos que respondieron a un cuestionario comunitario, acerca de la efectividad de 11 medidas contra el mal uso del alcohol. La medida que con mayor frecuencia fue calificada como efectiva fue el aumento de programas preventivos en las escuelas; con menor frecuencia fue calificada como efectiva el aumento en los impuestos a bebidas alcohólicas. Los sujetos que reportaron consumo excesivo de alcohol durante el año pasado, y los hombres, mostraron una menor probabilidad de calificar como efectivas las estrategias con potencial de tener un impacto personal, por ejemplo, hacer valer estrictamente las leyes en contra de manejar en estado de intoxicación alcohólica y el aumento en los impuestos a bebidas alcohólicas. Estudios anteriores que han examinado el apoyo comunitario de medidas contra el alcohol, han reportado relaciones similares entre practicas de beber y apoyo a medidas que imponen restricciones personales. La efectividad percibida y el apoyo, por lo tanto, parecen estar relacionados pero son medidas diferentes. Nuestros resultados sugieren la necesidad de caracterizar con mayor detalle las interrelaciones entre la percepción de efectividad, apoyo, practicas de beber de los sujetos, y la efectividad de una gama de medidas de control comprobadas empíricamente. Estos conocimientos deberían de ser utilizados para identificar estrategias de prevención comunitaria que sean empíricamente efectivas y a la vez aceptables para las poblaciones.

RÉSUMÉ

Cette étude évalue comment un groupe de sujets adultes résidant dans trois communautés perçoivent l'efficacité de 11 moyens d'intervention contre l'abus de l'alcool. La mesure jugée la plus efficace est une augmentation des programmes de prévention dans les écoles; la mesure jugée la moins efficace est l'augmentation des impôts sur l'alcool. Les personnes qui avaient rapporté des excès de consommation (5 boissons ou plus en quelques heures) pendant l'année précédant l'enquête, et les hommes, approuvaient beaucoup moins les mesures qui pouvaient avoir une conséquence personnelle directe comme le renforcement des lois contre la conduite en état d'ivresse ou l'augmentation de l'impôt sur l'alcool. Des études antérieures ont de même montré une relation inverse entre le degré de consommation alcoolique et le soutien de mesures imposant des restrictions personnelles. Ainsi la perception de l'efficacité de programmes anti-alcool et leur soutien semblent être liés mais aussi distincts. Nos résultats suggèrent qu'il faut caractériser plus précisément les relations

entre perception de l'efficacité de certaines mesures préventives, support de la communauté envers ces mesures, degré de consommation alcoolique des sujets, et l'efficacité de ces mesures démontrée empiriquement. Cette information devrait être à la base des stratégies de prévention pour augmenter leur efficacité et leur acceptation.

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Substance Use & Misuse, 32(5), 555–570, 1997

The Use of Bibliometric Data in Evaluating Research on Therapeutic Community for Addictions and in Psychiatry

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ABSTRACT

The purpose of this study is to describe the publication characteristics associated with therapeutic community research and illustrate differences between addiction studies and other types of therapeutic community papers. A total of 223 published reports on research pertaining to the therapeutic community in a variety of treatment settings from 1987 to 1992 were analyzed. The articles consisted mainly of addiction studies (38%) and hospital psychiatry (36%) studies. Collaborative authorship was scanty. Quantitative studies (systematic data presented and analyzed statistically) were performed more often in addiction papers than in psychiatric therapeutic community papers. Addiction studies were also cited slightly more often. Addictions are often a rather simple and distinct focus for research, as well as a major public health problem. This may lead to the smoother use of traditional quantitative research strategies and standard publication channels than in other psychiatric therapeutic community studies.

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Key words. Therapeutic community; Substance misuse; Bibliometrics

INTRODUCTION

At present, the therapeutic community (TC hereafter) is a treatment approach used widely around the world, particularly in the treatment of alcohol and drug users (De Leon, 1985) and criminal offenders (Wexler et al., 1992). The TC practice has also been applied in mental hospitals and psychiatric rehabilitation systems, as well as in institutions for adolescents (Kennard, 1983; Isohanni, 1983), and even with addiction problems (Bess and Brömer, 1992).

TCs are not homogeneous. Formative influences have emerged from self-help, mutual aide, and shared responsibility movements (Kennard, 1983). People use the phrase "a therapeutic community" to describe different sorts of ventures, even to the extent that a problem of definition has developed (Trauer, 1984; Stauble, 1988). Recently, the conceptualization and structure of the therapeutic community employed for the treatment of substance misuse in America was critically discussed in this journal (Christie and DeBarry, 1994).

The residential therapeutic community is one of the major treatment modalities of alcohol and drug users. There are more than 500 drug-free residential treatment programs in the United States; 25% of these employ the long-term TC model (De Leon, 1985, 1989; Rosenthal, 1989). Originally pioneered for the treatment of heroin addiction, recent admissions to TCs reveal a wide range of alcohol and other drug problems. The profile of TC patients is also demographically diverse, and TC modality responds to clients with different lifestyles and from different economic and ethnic backgrounds (De Leon, 1985).

The central figure in the development and popularization of TC for psychiatric patients was Maxwell Jones (Kennard, 1983). He worked in a military hospital in England during and shortly after the Second World War, rehabilitating neurotic war veterans. He changed the punitive, authoritarian structure of the psychiatric unit, developed programs that actively involved the patients in their treatment, educated them to the dynamics of their symptoms, and provided them with a work program. Both treatment and residential management became the shared responsibilities of patient and staff. The traditional hospital barriers began to drop and a feeling of intimacy and democratization developed.

Therapeutic communities for substance users appeared more than a decade after the TCs started in Great Britain in psychiatric settings. An essential distinction between the two is the context of their beginnings. Psychiatric TCs illustrate a quite extraordinary attempt to transform the environment, role relations, and practices within established hospital institutions. TCs for substance

users evolved essentially outside of existing services delivery systems (De Leon, 1985). De Leon (1991) emphasized that TC for addictions is a self-help phenomenon whose evolution has proceeded primarily outside of mainstream psychiatry, psychology, and medicine. Both TC types, however, have an existential view of recovery and rehabilitation, and both employ self-help, mutual help, and supportive group processes in a communal-living milieu to achieve the goals (Rosenthal, 1989).

Scientific publishing is an important part of the process of producing and disseminating new knowledge in the field of therapeutic community. Researchers wish to reach as wide an audience as possible. They also wish to gain prestige by publishing in distinguished scientific journals and by publishing as many articles as possible. In therapeutic community research, the audience to reach is heterogeneous. Bibliometric methods provide one instrument with which to study scientific communication in the therapeutic community context.

WHAT IS BIBLIOMETRICS?

Bibliometrics—the quantitative study of written communication—is a new field in medicine, and its concepts are still unfamiliar (Luukkonen, 1990). Its main concepts are therefore briefly defined in Table 1. A large number of bibliometric studies have been carried out in recent years due to an interest in citation analysis (King, 1987; Egghe and Rousseau, 1990). References given in scientific publications are one institutional form of giving credit or recognizing the value of previous work in science. Citation analysis is thus often assumed to measure the contribution of a given scientific work to the advancement of knowledge.

In recent years, policymakers, research managers, and researchers have become increasingly interested in the use of indicators of scientific output. It was with the development of the Science Citation Index (Table 1) in the United States in the 1960s that bibliometric data covering the world's leading scientific journals became readily available (Garfield, 1983). There have not been many systematic assessments of the research literature in psychiatry. Previous evaluations include bibliometric studies of religious subjects (Larson et al., 1986) and research on anxiety disorders (Cox et al., 1994).

AIMS OF THE STUDY

Although evaluations and reviews of TC research (Trauer, 1984) have indicated a need for improvement, no systematic reviews of research status and methods in TC literature have been conducted. The motivation and main research aim of this the study was to identify the special features inherent to TC

Table 1.

A Description of Some of the Central Bibliometric Terms Used in This Paper

Term	Brief description
Bibliometrics	Quantitative studies of written communication. Bibliometrics systematically measures and analyzes the number and influence of publications.
Citation	When one scientific document mentions or makes reference to another document, article, or researcher, the latter has been cited by the former. Citations are obtained and thus refer to the process from the point of view of the cited document.
Citation analysis	A bibliometric method which measures and studies citations to a particular paper for a period of years after its publication. It is one method to assess the actual impact of a piece of work on the international research front, over a short term.
Impact factor	Represents the number of citations (by the papers in all of the journals represented in the SCI/SSCI database) of a journal's papers in a given year divided by the number of the journal's source items published in the preceding 2 years. A journal's impact factor provides an estimate of the expected citations for the articles published in a journal. It reflects the average visibility and influence of the journal and its articles.
Medline	The leading article database in medicine, produced by the National Library of Medicine, USA.
Reference	The mention or description of one document in another. Reference is made, i.e., references are given in footnotes and bibliographic listings at the end of an article. References are extracted to produce the SCI and SSCI indexes.
SCI/SSCI	The Science Citation Index (SCI) and the Social Sciences Citation Index (SSCI) are run by the Institute for Scientific Information (ISI). The ISI collects publication and citation data for the SCI presently from about 3,200 (mainly medical, natural science, and technology) publications and for the SSCI from about 1,400 social science publications.
SCISearch and Social SCISearch	On-line versions of SCI and SSCI databases. Accessible via computer networks worldwide.

research methods and the reporting practices in international journals. We have earlier compared the study strategy and citation performance of TC research to non-TC psychiatric ward studies (Nieminen, 1996a). We consider TC research as the field is within the authors' previous experience and a focus in the developmental research project where modified TC principles were applied to the institutional care of mainly acute psychiatric patients during 1975–1993 (Isohanni, 1983, 1993; Nieminen, 1996b).

In this study, papers referring to treatment programs for addicts are compared to publications of the TC model in psychiatry. These two types of therapeutic communities are usually distinguished in the TC literature (Kennard,

1983; De Leon, 1985; Christie and DeBerry, 1994). The two models evolved independently, reflecting some differences in staffing, social organization, and clients served.

This study applies citation counts and journal impact factors (see Table 1) to provide insight into the communication of published TC research. The empiric data are analyzed and focus on the following study questions:

1. What kind of TC research reports are published in international scientific journals?
2. How are they distributed by authorship and article type in addiction and psychiatric fields?
3. What publishing habits concerning the prestige and visibility of selected publication channels do TC researchers have?
4. Are there subfield differences in publishing patterns?
5. How many citations do TC articles receive?

MATERIAL AND METHODS

Therapeutic Community Articles

The set of TC articles was obtained through Medline (Table 1). The TC area was defined by including articles which were indexed with the medical subject headings (MeSH terms) "therapeutic community" or "milieu therapy" by the National Library of Medicine or included these terms in the title or abstract. In summary, the selection criteria used to compose the list of publications that are subjected to the analysis was as follows: publication language, English; year of publication, 1987–1992; topic, therapeutic community, milieu therapy. The list of hits or search results from the Medline database included 223 articles. All these articles were then supplied by the Medical Library of the authors' institute.

Variables

The following properties of the stated author(s) of an article were measured: the home country of the first author's institution, the number of institutions involved, international cooperation (no/yes), and the number of authors. The TC subfield which each research report pertained to was resolved. We used the following categories according to Isohanni (1983): (a) TC for addictions, (b) TC for psychiatric hospital wards, (c) TC for adolescents, (d) other TCs (e.g., young offenders, geriatric, . . .). In the analysis, categories b, c, and d were combined to form a group of TC in psychiatry. This variable only discriminates the TC fields with different origins and types of residents or

patients, and does not underline the range of possible variation between individual TCs (Kennard, 1983).

Each article was classified by the type of study report in the following manner: (a) an original quantitative report based on the statistical analysis of data, (b) a qualitative original report based on empirical observation (primarily verbal description of treatment methods or participants), (c) a case report, (d) a review (including summaries of treatment methods and surveys of previously published literature), (e) other (letter, editorial, short communication). In addition, the following information was obtained from the empirical research reports: whether study design included comparison or control group to TC patients. Only comparisons to other treatment methods than TC or to normal population are recorded here. Internal comparisons between TC patients are not included.

The impact factor (see Table 1) for the publication year was recorded from the journal which published the article under study. In the analysis, the impact factor variable was used with three classes: journals not in the SCI/SSCI system, an impact factor < 1, an impact factor ≥ 1. The cut-off value of 1 was chosen because it was close to the upper quartile value of impact factor (1.05) in this article sample. The following journal subject classification by the National Library of Medicine in *Index Medicus 1991* was used: (a) substance misuse, (b) psychiatry, (c) child psychiatry or adolescence, (d) (general) medicine, (e) nursing and social work, (f) other medical subfield (public health, psychology, pharmacology, . . .).

The citations for the articles were obtained in November 1994 from the SCISearch and Social SCISearch databases provided by DataStar Dialog Europe and Dialog Information Services. In cross-tabulation (Table 2), citation counts were classified into three categories in the following manner: no citations, 1–3 citations, 4 or more citations (2 or more for articles published in 1992 because these had not had enough time to receive many citations). This cut-off value of four citations was chosen because it approximately divided the upper quartile of citations.

Data Presentation and Analysis

The data were analyzed using SPSS for Windows software. The distributions of citations by publication year were visualized with box plots. Cross-tabulation was used as a main tool of data presentation and analysis. The statistical significance of differences between TC for addictions and TC in psychiatry was evaluated using the chi-square test.

RESULTS

Subject, Authors, and Type of Articles

Of the 223 therapeutic community articles, the main groups were addiction studies or research on TC employed for the treatment of substance misuse (84 articles, 38%) and hospital psychiatry (80 articles, 36%) studies. TC for adolescents was the topic in 41 (18%) articles and other TC in 18 (8%) articles. The number of published TC articles per year is presented in Fig. 1. The number of Medline indexed addiction articles per year varies from 7 to 18 and the number of TC in psychiatry articles from 20 to 27. The total number of entries per year has been steady during the study period 1987–1992.

The characteristics of the authors are summarized in Table 2. Collaboration was not large-scale. International cooperation was reported in only one

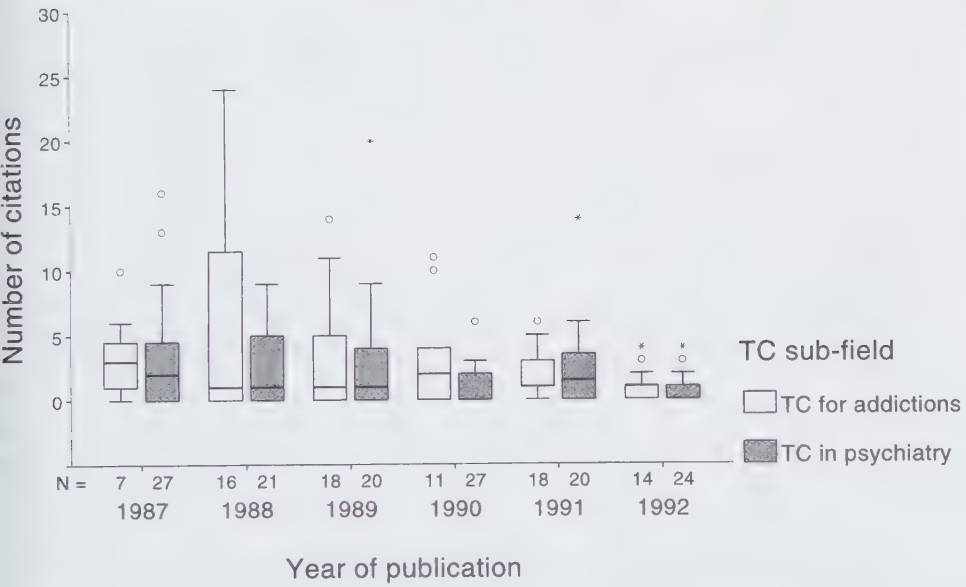

Fig. 1. Citations by year of publication for TC in addictions and TC in psychiatry articles. One psychiatric TC article published in 1991 had received 44 citations, and this extreme value is not shown. The horizontal line in the middle of the boxes is the median value of citations, and the lower (upper) boundary indicates the 25th (75th) percentile. The box plot also displays outliers and extreme values; cases with values more than 1.5 (3) box-length from the upper edge of the box are designated with a circle (an asterisk), respectively. The largest and smallest observed values that are not outliers are also shown. Lines are drawn from the ends of the box to those values.

Table 2.

Distribution of Measured Variables in TC for Addictions and TC in Psychiatry Article Groups

Variable	TC for addictions		TC in psychiatry		Total	*P*-value of
	n	(%)	*n*	(%)	*n*	χ^2 test
Home country of the first author's institution:						0.693
USA or Canada	61	(73)	95	(68)	156	
Europe	20	(24)	36	(26)	56	
Other	3	(4)	8	(6)	11	
Number of authors:						0.434
1	31	(37)	56	(40)	87	
2 or 3	36	(43)	64	(46)	100	
≥4	17	(20)	19	(14)	36	
Number of institutions involved:						0.220
1	50	(60)	94	(68)	144	
≥2	34	(40)	45	(32)	89	
Type of article:						0.001
Quantitative report	48	(57)	54	(39)	102	
Description	13	(16)	43	(31)	56	
Case study	0	(0)	9	(7)	9	
Review	21	(25)	23	(16)	44	
Letter, short report	2	(2)	10	(7)	12	
Journal subject type:						<0.001
Substance abuse	57	(68)	3	(2)	60	
Psychiatry	11	(13)	71	(51)	82	
Child psychiatry or adolescence	1	(1)	21	(15)	22	
General medical	3	(4)	7	(5)	10	
Nursing or social work	2	(2)	33	(24)	35	
Other medical subfield	10	(12)	4	(3)	14	
Impact factor:						0.207
No impact factor	19	(23)	47	(34)	66	
0–1	45	(54)	64	(46)	109	
>1	20	(24)	28	(20)	48	
All articles	84	(40)	139	(23)	223	

article (an addiction study from Italy with collaborators from the United States). The distributions of article type are also presented in Table 2. The traditional method used in medicine of applying statistical data analysis was more common in addiction studies (48 articles, 57%) than in psychiatric TC studies (54 articles, 39%). Participant observation, a description of treatment methods, and case studies were reported more often in psychiatric TC articles (52 articles, 38%). A comparison group was included in 17 quantitative articles: 10 (20.8%) in TC for addiction articles and 7 (13.0%) in TC in psychiatry articles. All qualitative articles considered only TC patients.

Publication Channel

Most of the TC for addictions articles were published in journals of substance misuse studies (68%) (Table 2). Large subgroups of journals for TC in psychiatry were psychiatric journals (51%) and journals of nursing and social work (24%).

The most common journals are listed in Table 3. There were differences in the visibility and prestige of the journals when measured by impact factor. Within TC research, the more specialized child and adolescent psychiatry journals are not as visible publications as are journals on general psychiatry. General medical journals offer both highly esteemed and cited publication channels, but medical journals at a national level have a somewhat limited visibility. The low impact factor prestige of nursing and social work journals was evident. The

Table 3.

Journals Which Published at Least 4 Therapeutic Community (TC) Articles during 1987–92. The Mean Value of the Journal's Impact Factor for the Years 1987–92, the Average Citations, and the Number of Published Articles Are Reported

Journal	Mean impact factor 1987–92[a]	Average citations/TC article/year	Number of TC for addictions articles	Number of TC in psychiatry articles
International Journal of the Addictions	0.47	0.39	18	0
Hospital and Community Psychiatry	1.11	1.03	1	11
Journal of Substance Abuse Treatment	0.63	0.35	10	2
British Journal of Addiction	1.37	1.20	10	0
Acta Psychiatrica Scandinavica	0.99	0.78	2	7
Archives of Psychiatric Nursing	no IF	0.14	0	7
NIDA Research Monographs	no IF	0.43	7	0
American Journal of Psychiatry	4.26	4.56	1	4
Adolescent Psychiatry	no IF	0.03	1	4
Journal of Psychosocial Nursing and Mental Health	no IF	0.04	0	5
New Directions in Mental Health	no IF	0.22	1	4
Perspectives in Psychiatric Care	no IF	0.00	0	5
Psychiatry	0.87	0.72	0	5
Bulletin of Menninger Clinic	0.34	0.13	0	4
International Journal of Group Psychotherapy	0.56	0.67	0	4
International Journal of Social Psychiatry	no IF	0.21	0	4
Journal of Adolescence	0.37	0.25	0	4
Psychological Reports	0.24	0.74	3	1

[a]No IF = journal has no impact factor.

highest journal prestige (impact factor 22.68) had a review TC article on treating drug problems published in *The New England Journal of Medicine* in 1990 (Gerstein and Lewin, 1990).

Citations

In Fig. 1 the citations received are presented as a box plot according to year of publication. Articles published in 1992 thus had the shortest follow-up time as well as the lowest citation counts. The most cited TC article, which reviewed self-injurious behavior (and milieu therapy as one form of treatment), had received 44 citations in 3 years. The distribution of citations is categorized into three groups in Fig. 2. Thirty-nine percent of all articles did not receive any citations. Addiction studies received slightly more citations than did psychiatric TC studies (the *p*-value of chi-square test was 0.07).

DISCUSSION

Research reports of the TC model developed for drug and alcohol addicts was compared to applications of the model in psychiatry. The proportion of

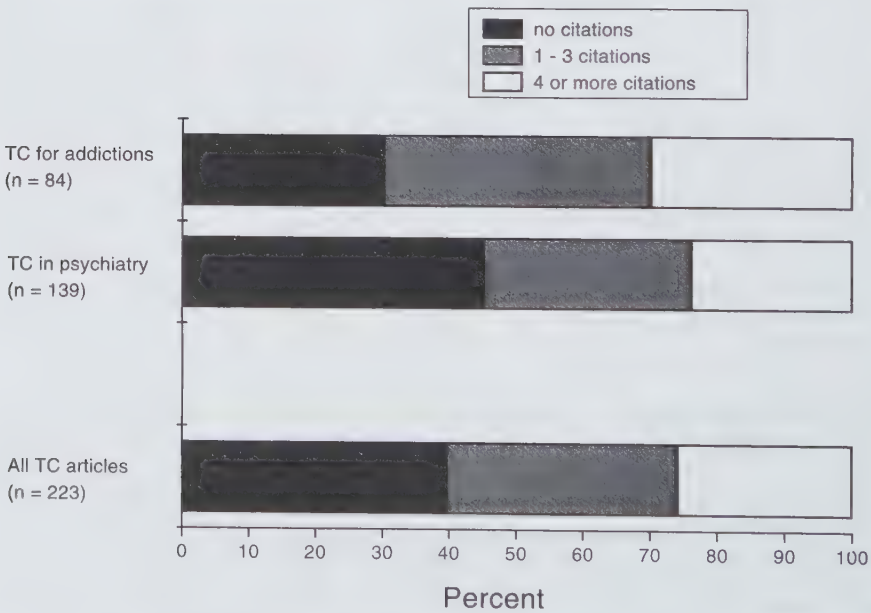

Fig. 2. The percentage frequency distributions of received citations (in three groups) in TC for addiction and TC in psychiatry papers.

addiction papers from all TC articles published in Medline-indexed journals was large (38%). The majority of papers in both groups came from the United States or Canada. Collaboration in coauthorship was not wide. The quantitative research based on systematic data collection and statistical data analysis was the most common study type in addiction studies. The unsuitability of quantitative methods to TC research was evident, however, in that participant observation and the description of treatment methods were often described in psychiatric TC reports. Another trend which was evident was that TC researchers did not often publish their work in visible journals. Addiction articles are slightly more often cited than psychiatric TC articles.

There are coverage problems in the available publication databases. The source journals for Medline and SCI/SSCI have a considerable bias in favor of United States and other English-language journals (King, 1987; Egghe and Rousseau, 1990). The present coverage cannot be said to be complete, but all major journals in medicine are included. When evaluating TC research, however, it is problematic that such a major journal in TC research as *Therapeutic Communities* published by the Association of Therapeutic Communities escapes both Medline and SCI/SSCI nets. Why this can happen is unclear because the journal has made efforts to see that it is covered by article databases and abstracting services (Kennard, 1995).

This study demonstrates the current status of published TC research. The main fields of research are TC for substance misusers and the psychiatric hospital ward as a TC. In the United States, TC is widely used for the treatment of alcohol and drug misusers, but in the Nordic countries and the rest of Europe the emphasis is on mental hospitals and psychiatric rehabilitation systems (Isohanni, 1993). Most TC articles came from the United States or Canada (70%) or Great Britain (13%). This may partly be a result of the Anglo-American bias in the Medline. This bias means that research results published by national publications of small countries, and even those of major, non-English speaking countries, are not registered. However, a clear majority of substance use journals are in English according to *Ulrich's Journal Database*, which contains citations to approximately 145,000 international and national serial publications.

Scientific collaboration can be measured by the number of authors: multiple authored papers reflect collaborative research. Bibliometric analyses about the impact and visibility of scientific publications seem to support the idea that it pays to cooperate (Herbertz, 1995). The lack of collaboration in TC research, however, was notable: 39% of the TC articles were produced by a single author and only 16% by four or more authors (see Table 2). A much wider coauthorship was reported in the SCI (see Table 1): only 19% of the articles have one author and 31% have four or more authors (Godin et al.,

1995). In the TC article sample under study, one article involved international collaboration. This is far from the SCI average, which stands at 11% (Godin et al., 1995).

Over the past decades the number of papers with multiple authors has increased considerably in scientific work (King, 1987). Although this is largely due to a greater prevalence of collaborative research, the gratuitous conferring of coauthorship is not uncommon. The number of authors is not the same as all who wrote the article or who participated in the study. The rules of becoming the author of a particular scientific paper may have changed in biomedicine and other academic fields under the pressure of "publish or perish."

Previous studies have examined the different determinants of scientific collaboration. Beaver and Rosen (1978) explained the importance of collaboration through the intellectual and material resources collaboration offers and through factors related to the social stratification of science as a profession. The pioneers of TC as clinicians rely more on intuition and personal experience. Therefore, they might not establish or seek collaboration in the form of research teams as do researchers. TC practitioners interested in scientific work and writing appear to be lone wolves. The number of institutions and authors shown as collaborators in their publication may reflect this aspect. Basic fields researchers also try more to achieve recognition from the international research communicty and are therefore oriented toward this community and seek to foster international collaboration (Frame and Carpenter, 1979).

TC for addictions group included more articles reporting original research findings based on systematic data collection and on using various statistical data analysis tools than did the TC in psychiatry group (57% compared to 39%). Authors of TC in psychiatry more often published narrative papers. TC for addictions papers seemed to conform more with the article types published in major psychiatric journals (Pincus et al., 1993). The proportion of traditional research articles has risen significantly in these journals.

Authors of TC articles came from a variety of specialities: psychiatry, child psychiatry, psychology, nursing, social work, and health management. This versatility is also seen in Table 2 in the choice of publishing channel. The interest in the journals of these fields is limited, and TC researchers did not often publish their work in the more visible journals. TC workers outside academia are not used to scientific reading and hesitate to approach this kind of material. The subfield journals may, however, be even more valued among readers with that particular special interest.

The addiction papers within TC research resulted in greater citation counts than those on psychiatric TC research. There are many problems with the use of citation counts which stem from differences in citation (and publication) practices and conventions between the fields of science (Cronin, 1984). The

probability of being cited is field-dependent: a relatively small, isolated field will attract far fewer citations than either a more general field or research within a narrower field with a wider focus of interest (Luukkonen, 1990). The number of citations received is associated with the subject and visibility of the publishing journal. Table 3 shows that the average number of citations received by TC articles is usually close to the general average for the publishing journal (i.e., impact factor). Scholars inside addiction fields may take addiction journals into consideration, some of which are established journals in which a publication can achieve an optimal audience and therefore also be cited more often. References made to TC articles published in nursing journals were rare. Within psychiatry, articles published in child and adolescent psychiatry journals were also less cited.

The interpretation of citations as indicators of the quality and influence of scientific performance has been questioned (King, 1987; Egghe and Rousseau, 1990; Luukkonen, 1990). Quality and impact are different notions, and in practical applications a careful distinction has to be made. Most criticism of citation analysis deals with the problem of the unknown or nonscientific motivations of citers (Cronin, 1984). Publications are referred to for a variety of reasons, and references have different kinds of meanings or functions in a text. References may be meant for the reader to get background information. They can also be an indication of the author's familiarity with the field. Furthermore, by referring to other publications, arguments presented can be substantiated and thus, by mentioning authoritative sources, the reader can be convinced of the author's wide reading and the validity of his argumentation. The citing of publications is further influenced by social factors, such as which researchers the person making the reference appreciates, and who the authors of the publication to be referred to are. Critical references and the authors' references to their own work are the most lucid examples of cases that cannot be regarded as recognition for research colleagues.

Addictions are a major public health problem which are also often encountered in emergency services and somatic consultations. Addictions are—at least superficially—easy to diagnose and study, and the outcome indicators of care may also be simple (relapsed/not relapsed). This special nature may also be one important factor associated with the marked interest in these in medical journals, as well as with the use of traditional medical research strategies and publication channels. The better citation performance of addiction studies could also be explained by this visibility.

REFERENCES

BEAVER, D. B., and ROSEN, R. (1978). Studies in scientific collaboration. Pt I, The professional origins of scientific co-authorship. *Scientometrics* 1: 65–84.

BESS, R., and BRÖMER, H. (1992). *EuroTC1992. European Conference of Therapeutic Communities. Appendix to the Conference Report.* Berlin: Federation of Drugfree Treatment Centers.

CHRISTIE, S. D., and DEBERRY, S. T. (1994). Culture and community in the therapeutic community: Implications for the treatment of recovering substance misusers. *Int. J. Addict.* 29: 803–817.

COX, B. J., WESSEL, I., NORTON, G. R., and SWINSON, R. P. (1994). Citation patterns in anxiety disorders research in 14 journals: 1990–1991. *Am. J. Psychiatry* 151: 933–936.

CRONIN, B. (1984). *The Citation Process.* London: Taylor Graham.

DE LEON, G. (1985). The therapeutic community: Status and evolution. *Int. J. Addict.* 20: 823–844.

DE LEON, G. (1989). Psychopathology and substance abuse: What is being learned from research in therapeutic communities. *J. Psychoactive Drugs* 21(2): 177–188.

DE LEON, G. (1991). The therapeutic community and behavioral science. *Int. J. Addict.* 25: 1537–1557.

EGGHE, L., and ROUSSEAU, R. (1990). *Introduction to Informetrics. Quantitative Methods in Library, Documentation and Information Science.* Amsterdam: Elsevier.

FRAME, J. D., and CARPENTER, M. P. (1979). International research collaboration. *Soc. Stud. Sci.* 9: 481–497.

GARFIELD, E. (1983). *Citation Indexing—Its Theory and Application in Science, Technology and Humanities.* Philadelphia, PA: ISI Press.

GERSTEIN, D. R., and LEWIN, L. S. (1990). Treating drug problems. *New Engl. J. Med.* 323: 844–848.

GODIN, B., BARKER, R. S., and LANDRY, M. (1995). Besides academic publications: Which sectors compete, or are there competitors. *Scientometrics* 33: 3–12.

HERBERTZ, H. (1995). Does it pay to cooperate? A bibliometric case study in molecular biology. *Scientometrics* 33: 117–122.

ISOHANNI, M. (1983). *The Psychiatric Ward as a Therapeutic Community.* Acta Universitatis Ouluensis D 111. Oulu: University of Oulu.

ISOHANNI, M. (1993). The therapeutic community movement in Finland—past, current and future views. *Ther. Commun.* 14(2): 81–90.

KENNARD, D. (1983). *An Introduction to Therapeutic Communities.* London: Routledge & Kegan Paul.

KENNARD, D. (1995). Editorial. *Ther. Commun.* 16(4): 213–214.

KING, J. (1987). A review of bibliometric and other science indicators and their role in research evaluation. *J. Inf. Sci.* 13: 261–276.

LARSON, D. B., PATTISON, E. M., BLAZER, D. G., OMRAN, A. R. and KAPLAN, B. H. (1986). Systematic analysis of research on religious variables in four major psychiatric journals, 1978–1982. *Am. J. Psychiatry* 143: 329–334.

LUUKKONEN, T. (1990). Bibliometrics and evaluation of research performance. *Ann. Med.* 22: 145–150.

NIEMINEN, P. (1996a). Type of empirical research reports as an explanatory factor in citation performance of psychiatric research. *Scientometrics* 35: 309–320.

NIEMINEN, P. (1996b). *Therapeutic Community Research and Statistical Data Analysis.* Acta Universitatis Ouluensis D 360. Oulu: University of Oulu.

PINCUS, H. A., HENDERSON, B., BLACKWOOD, D., and DIAL, T. (1993). Trends in research in two general psychiatric journals in 1969–1990: Research on research. *Am. J. Psychiatry* 150: 135–142.

ROSENTHAL, M. S. (1989). The therapeutic community: exploring the boundaries. *Br. J. Addict.* 84: 141–150.

STAUBLE, W. J. (1988). Therapeutic community: A Canadian update. *Can. J. Psychiatry* 33: 213–217.

TRAUER, T. (1984). The current status of the therapeutic community. *Br. J. Med. Psychol.* 54: 71–79.

WEXLER, H. K., FALKIN, G. P., LIPTON, D. S. and ROSENBLUM, A. B. (1992). Outcome evaluation of a prison therapeutic community for substance abuse treatment. *NIDA Res. Monogr.* 118: 156–175.

RESUMEN

Este estudio tiene por objetivo describir las características de publicación asociadas a la investigación sobre la comunidad terapéutica y ilustrar las diferencias entre los estudios sobre las adicciones y otro tipo de publicaciones sobre la communidad terapéutica. Un total de 223 informes publicados sobre la investigación relativa a la comunidad terapéutica en una variedad de marcos de tratamiento entre los años 1987 y 1992 fueron analizados. Los artículos consistían principalmente en estudios sobre las adicciones (38%) y en estudios psiquiátricos hospitalarios (36%). La colaboración entre autores quedó limitada. Los estudios cuantitativos (los datos sistemáticos presentados y analizados estadísticamente) fueron realizados más frecuentemente en las publicaciones sobre las adicciones que en los publicaciones sobre las comunidades terapéuticas psiquiátricas. Además, los estudios sobre las adicciones fueron citados con una frecuencia un poco más grande. Las adicciones forman a menudo por el estudio un foco relativamente sencillo y distinto al igual que un mayor problema sanitario. Esto conduce tal vez a un uso más moderado de las estrategias de investigación cuantitativa tradicional y de los conductos corrientes de publicación que en los otros estudios sobre la comunidad terapéutica psiquiátrica.

RÉSUMÉ

Cette étude a pour objectif de décrire les caractéristiques de publication associées à la recherche sur la communauté thérapeutique et d'illustrer les différences entre les études sur les accoutumances et d'autres types de publications sur la communauté thérapeutique. Un total de 223 rapports publiés sur la recherche concernant la communauté thérapeutique dans une variété de cadres de traitement entre les années 1987 et 1992 ont été analysés. Les articles consistaient principalement en études sur les accoutumances (38%) et en études psychiatriques hospitalières (36%). La collaboration entre auteurs était limitée. Les études quantitatives (les données systématiques présentées et analysées statistiquement) ont été effectuées plus souvent dans les publications sur les accoutumances que dans ceux sur les communautés thérapeutiques psychiatriques. De plus, les études sur les accoutumances ont été citées avec une

fréquence légèrement plus grande. Les accoutumances forment souvent pour la recherche un centre d'intérêt relativement simple et distinct ainsi qu'un problème majeur de santé publique. Ceci peut conduire à une utilisation plus modérée des stratégies de la recherche quantitative traditionnelle et des canaux standards de publication que dans les autres études sur la communauté thérapeutique psychiatrique.

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Substance Use & Misuse, 32(5), 571–585, 1997

Job Dissatisfaction and Substance Use among Employed High School Students: The Moderating Influence of Active and Avoidant Coping Styles

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ABSTRACT

This study extends prior stress-coping-substance use research among adolescents by examining the employment context. Specifically, this study examines the relation of job dissatisfaction to substance use and the potential moderating influence of active and avoidant coping styles. Data were obtained from 446 employed high school students. Ordered-probit regression analyses reveal that job dissatisfaction is positively related to cigarette and alcohol use, but not to illicit drug use. Coping styles do not moderate the relation between job dissatisfaction and substance use. Nonetheless, coping styles have significant main-effect relations to substance use. Active coping is negatively related and avoidant coping is positively related to both cigarette and alcohol use. Neither coping style is related to illicit drug use.

Key words. Job dissatisfaction; Coping; Employment; Adolescence; Substance use

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INTRODUCTION

It has become normative for adolescents in North America to attend school while simultaneously holding membership in the part-time labor force (Mortimer and Shanahan, 1994). For example, in an employment study of Ontario, Canada, Krahn (1991) reported that the labor force participation rate was 54% among full-time students between the ages of 15 and 19. In addition, national surveys of United States high school seniors found that 75% were employed during the school year, and of the employed seniors, 46% work more than 20 hours per week (Bachman and Schulenberg, 1993). However, in contrast to adults, there is a paucity of research that has examined the relation of work characteristics or work-related affect to health outcomes, such as the use of cigarettes, alcohol, and illicit drugs. This is surprising given that the adolescent work environment has been characterized in negative terms. For example, after completing a review of the literature, Steinberg (1982) concluded that "most adolescents . . . work in unskilled positions with fairly routinized tasks and little formal instruction" (p. 200). In an attempt to redress this issue, the present study examined the relation of job dissatisfaction to substance use and the potential moderating influence of active and avoidant coping styles in a sample of employed high school students.

Job Dissatisfaction and Substance Use

Job dissatisfaction is defined as a negative emotional state resulting from an appraisal of one's overall job experience (Jayaratne, 1993; Locke, 1976). Therefore, on the basis of stress-coping and affect regulation models of substance use (e.g., Carmody, 1992; Chesney, 1991; Cooper et al., 1995; Martin and Roman, 1996; Wills and Shiffman, 1985), a positive relation between job dissatisfaction and substance use would be expected. The rationale underlying this expectation is that psychoactive substances represent a specific coping mechanism used to alleviate the experience of negative emotions. Although past research on adolescent substance use has not examined job dissatisfaction as a potential predictor, several sets of research findings indirectly support a positive relation between these two variables. First, previous adolescent research supports a positive relation between general measures of negative affect (e.g., depression, anxiety, anger) and substance use (e.g., Alva, 1995; Hussong and Chassin, 1994; Tschann et al., 1995; Way et al., 1994). Second, school dissatisfaction and alcohol use are positively related among adolescents (e.g., Aseltine and Gore, 1993). Third, among adults, research has found that job dissatisfaction is positively related to alcohol use (e.g., Martin and Roman, 1996). Taken together, prior research supports the notion that both general

(e.g., depression and anxiety) and role-specific (school dissatisfaction among adolescents and job dissatisfaction among adults) measures of affect may be related to the use of various psychoactive substances. Therefore, we extend this line of research by testing the following hypothesis among employed high school students.

Hypothesis 1: Job dissatisfaction is positively related to the use of cigarettes, alcohol, and illicit drugs.

Coping Styles and Substance Use

Although cigarettes, alcohol, and illicit drugs may be used instrumentally in an effort to manage negative affect, this relation may not generalize to all groups of individuals. In other words, various individual characteristics might moderate the relationship between job dissatisfaction and substance use. Coping styles, which represent general or habitual ways by which individuals attempt to resolve problems (Menaghan, 1983), are one set of factors that may influence the magnitude of the job dissatisfaction–substance use relation (Wills and Shiffman, 1985). Although a variety of typologies of coping styles have been proposed (see Edwards, 1988, for a review), Cooper and colleagues (Cooper et al., in press, 1992) have suggested that the general distinction between active versus avoidant coping is particularly relevant for understanding substance use.

An active coping style refers to the habitual use of strategies aimed at dealing directly with problems through cognitive or behavioral means. In other words, when they are emotionally distressed, high active copers try to change the events in their environment that they perceive to be the cause of their negative emotions. Thus, high active copers should be less likely than low active copers to use substances in response to job dissatisfaction because substance use might impede their ability or undermine their motivation to directly alter their job environment.

In contrast, an avoidant coping style refers to the habitual use of strategies aimed at the regulation of negative emotions. In other words, when they are emotionally distressed, high avoidant copers try to manage their negative affect rather than manage the perceived causes of this affect. Hence, high avoidant copers should be more likely than low avoidant copers to use substances in response to job dissatisfaction because substance use may provide a means to alleviate or direct attention away from their negative job-related emotions.

On the basis of the prior research and the arguments presented above, we tested the following hypotheses regarding the moderating influence of active and avoidant coping styles:

Hypothesis 2: High levels of active coping will buffer or attenuate the relation between job dissatisfaction and substance use.
Hypothesis 3: High levels of avoidant coping will strengthen or exacerbate the relation between job dissatisfaction and substance use.

METHOD

Sample

The sample for this study consisted of 446 high school students who worked at least 10 hours per week. These respondents were drawn from a larger sample of 733 juniors and seniors recruited from two homogeneous, non-denominational, suburban high schools. Approximately 76% of all eligible adolescents participated. See Table 1 for a summary of the demographic characteristics of the sample.

Table 1.

Descriptive Statistics for Sample

Variable	Percentage	Mean	Standard deviation	Observed range
Gender:				
Male	48.7			
Female	51.3			
Race:				
White	99.1			
Minority	00.9			
Age		17.03	0.74	16–19
Grade in school:				
Junior	48.0			
Senior	52.0			
School attended:				
School 1	39.9			
School 2	60.1			
Mother's education		12.92	1.93	4–19
Father's education		13.29	2.38	4–20
Family income		6.26	1.45	1–8
Cigarette use: quantity		0.94	1.45	0–6
Alcohol use: frequency		1.74	1.49	0–6
Alcohol use: quantity		3.11	2.76	0–9
Illicit drug use: frequency		0.52	1.25	0–6
Job dissatisfaction		0.00	0.88	−0.86–1.61
Active coping		3.09	0.75	1.25–5.00
Avoidant coping		3.10	0.67	1.00–5.00

Procedures

Subsequent to receiving approval from school administrators to conduct the study, schools provided a mailing list of the addresses of juniors and seniors. A packet of materials, including a letter of introduction by the school principal, a description of the study, and informed consent forms, was mailed to adolescents and their parents. Adolescents and parents were informed that a study pertaining to alcohol and substance use and other health-related behaviors was being conducted in the student's high school setting. The requirements of participation (i.e., completing a 45-minute survey during a designated class period), assurances of confidentiality, rights to withdraw from the study at any time without penalty, and payment for participation were provided in the initial cover letter. A telephone number was also provided if additional information about the study was desired. Those students willing to participate in the study were requested to return a signed (both adolescent and one parent) consent form in a self-addressed, stamped envelope. Confidentiality was assured on the informed consent form with a Department of Health and Human Services Certificate of Confidentiality.

Students completed the questionnaire in large groups in their high school setting during the spring of 1992. The survey was administered by a trained research team, and neither teachers nor school administrators were in the room during the time surveys were completed. The research team consisted of four females and two males, all Caucasians, with an age range of 27 to 39 years. Two of the members had Ph.D.'s, two had Master's Degrees, and two were in graduate school. All six members were educated in the social sciences (e.g., psychology, sociology) and had prior research and/or clinical experience. The survey took about 45–50 minutes to complete, and respondents received $10.00 for their participation. A make-up date was arranged for students who were unable to attend regularly scheduled questionnaire administration sessions.

Measures

Each of the measures is described in this section. Descriptive statistics are reported in Table 1 and zero-order correlations are reported in Table 2. Except as otherwise noted, all variables were scored so that a high score represents higher levels of the construct.

Job dissatisfaction was assessed with two questions. The first question was "How satisfying do you find your job?" Response anchors were 1 = not very satisfying, 2 = neither satisfying nor dissatisfying, and 3 = satisfying. The second question was "Do you find your work personally rewarding?" Response anchors were 1 = yes and 2 = no. Both items were reverse scored so that a

Table 2.

Zero-Order Intercorrelations (N = 446)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Cigarette use	—													
2. Alcohol use—frequency	.38*	—												
3. Alcohol use—quantity	.30*	.77*	—											
4. Illicit drug use	.37*	.38*	.32*	—										
5. Job dissatisfaction	.11*	.13*	.14*	.02	—									
6. Active coping	−.09	−.06	−.09*	−.04	−.15*	—								
7. Avoidant coping	.07	.13*	.04	−.03	−.09	.35*	—							
8. Gender[a]	.07	−.07	−.20*	−.08	−.11*	.10*	.25*	—						
9. Age	.04	.10*	.10*	.08	.15*	.03	.03	−.12*	—					
10. School grade[b]	.00	.09	.11*	.05	.12*	.09	.01	−.04	.68*	—				
11. School attended[c]	.06	.04	−.01	−.01	.08	−.08	−.03	.05	−.11*	−.20*	—			
12. Mother's education	−.08	.00	−.01	−.04	.03	.01	.02	−.01	.02	.05	.05	—		
13. Father's education	−.18*	−.08	−.03	−.05	.05	−.03	−.11*	−.05	.01	.07	.05	.35*	—	
14. Family income	−.07	.01	.04	.03	.10*	−.04	−.04	−.04	−.02	.07	.12*	.21*	.27*	—

[a]0 = Male, 1 = Female.

[b]0 = 11th grade, 1 = 12th grade.

[c]0 = School 1, 1 = School 2.

*$p < .05$.

high score reflected higher levels of job dissatisfaction. Scale scores were created by standardizing each item and then averaging the standardized responses. Coefficient alpha was .71.

Coping styles were assessed with two subscales from the Coping Inventory for Stressful Situations (CISS; Endler and Parker, 1994). Active coping and avoidant coping were each assessed with 16 items. Respondents rated the extent to which they engage in each coping activity when they encounter a difficult, stressful, or upsetting situation. Response scales for each item range from 1 = not at all to 5 = very much. Coefficient alpha was .93 for active coping and .83 for avoidant coping.

Cigarette use was assessed with a single question that asked about the number of cigarettes smoked per day during the past month. Response anchors ranged from 0 = none to 6 = two packs or more per day.

Alcohol use was assessed with two measures. The first measure assessed how frequently respondents consumed beer, wine, or liquor during the past month. The response anchors ranged from 0 = never to 6 = every day. The second measure assessed the number of drinks consumed on an average drinking occasion during the past month. The response anchors ranged from 0 = none to 9 = nine or more drinks. The frequency and quantity components of alcohol use were analyzed individually.

Illicit drug use was assessed with a series of questions that asked respondents how often during the past month they used drugs in each of the following seven categories: cannabis (e.g., marijuana or hashish), sedatives (e.g., downers, barbiturates, Valium, Quaaludes), stimulants (e.g., uppers, speed, bennies), inhalants (e.g., glue, gasoline, poppers), hallucinogens (e.g., LSD, mescaline, angel dust), cocaine or crack, and opiates (e.g., heroin, morphine). Responses scales for each item ranged from 0 = never to 7 = everyday. A variable representing overall frequency of illicit drug use was created by assigning each respondent a score that was equivalent to the highest value reported for any of the seven illicit drug categories (see Frone et al., 1994, for a detailed discussion of this maximum scoring method).

Covariates

Seven covariates were employed in the regression analyses. Data on the following four variables was provided by the adolescents: gender (0 = male, 1 = female), age (in years), class (0 = junior, 1 = senior), and school attended (0 = School 1, 1 = School 2). In addition, data on the following three socioeconomic status indicators was obtained from a parent or guardian: mother's education (in years), father's education (in years), and family income (eight categories ranging from less than $6,000 to $55,000 or more).

Validity of Self-Report Measures of Substance Use

Prior research has generally supported the validity of adolescent self-reported substance use (e.g., Winters et al., 1991). Moreover, some research has indicated even greater precision of measurement under conditions of subject anonymity or a belief that the self-reports will be independently verified (e.g., via the bogus pipeline method) (Murray and Perry, 1987). As noted above, confidentiality was assured on the informed consent form with a Department of Health and Human Services Certificate of Confidentiality. Finally, the data for the present analyses were drawn from the last wave of a four-wave study that extended over 2 years. Thus, it might be reasonable to conclude that by this point respondents developed a sense of trust in the study because prior promises of confidentiality had been maintained.

A more direct way to address potential misreporting of substance use that is motivated by the desire to project a socially desirable image is to control for a measure of socially desirable responding in the analyses. Although such a measure was not included in this study, recent research by Welte and Russell (1993) suggests that failing to control for social desirability may not adversely affect the findings from this study. Specifically, Welte and Russell (1993) concluded that "social desirability response bias probably results in the underestimates of rates of heavy drinking and drug use, but does not compromise the study of predictors of heavy drinking or drug use" (p. 758). The purpose of the present study was not to estimate rates of substance use, but rather to examine predictors of substance use.

Analyses

Hierarchical ordered-probit regression analysis was used to test Hypotheses 1–3. Ordered-probit regression was developed for ordinal-dependent variables where 1) the response scale contains a finite number of discrete but ordered response options that constrain the range of possible responses, and 2) an assumption of equal-sized intervals between options may not be tenable (Greene, 1993; Liao, 1994). These types of outcome variables are poorly suited to ordinary least-squares (OLS) regression analyses. The ordered-probit regression analyses were conducted using Greene's (1995) LIMDEP (Version 7.0) econometrics program. Because ordered-probit regression is a nonlinear probability model, it does not provide an F-statistic for the increment in model fit at each step of the hierarchical analysis (Aldrich and Nelson, 1984; Greene, 1993). However, an improvement chi-square statistic can be calculated from the log-likelihood statistics at adjacent steps (Aldrich and Nelson, 1984; Greene, 1993). Moreover, there is no strict analogue to the OLS R^2 in non-

linear regression models (Aldrich and Nelson, 1984; Greene, 1993). Nonetheless, we computed a pseudo-R^2 developed by Laitila (1993) to aid in the evaluation of the contribution of the independent variables to the prediction of the substance use outcomes.

For each dependent variable the predictors were entered hierarchically in three steps. The four covariates (gender, age, school grade, and school attended) were entered in the equations on Step 1. Job dissatisfaction, active coping, and avoidant coping were entered in the equations on Step 2. Finally the two coping style × job dissatisfaction interaction terms were entered in the equations on Step 3. Each predictor variable was centered (i.e., deviated from its mean) in order to examine the influence of each predictor variable while holding all other predictor variables constant at their respective means, and to eliminate nonessential correlation between the interaction terms and their constituent variables (Aiken and West, 1991).

RESULTS

The hierarchical ordered-probit regression results testing Hypotheses 1–3 are presented in Table 3. An examination of the covariates entered on Step 1 in Table 3 revealed one significant relation for gender. Specifically, adolescent males reported consuming more alcoholic drinks per drinking occasion than adolescent females. In addition, father's education was negatively related to both number of cigarettes smoked per day and the frequency of alcohol use. None of the remaining five covariates were related to the substance use outcomes.

The results for Step 2 of the analyses revealed that job dissatisfaction and the two coping variables accounted for a significant increment in explained variance for cigarette use and both the frequency and quantity of alcohol use. In support of Hypothesis 1, job dissatisfaction was positively related to these three outcomes. In addition, there were significant main effects for both active and avoidant coping. Specifically, active coping was negatively related and avoidant coping was positively related to cigarette use and the frequency and quantity of alcohol use. Job dissatisfaction and the two coping variables were not related to the frequency of illicit drug use. Finally, the results for Step 3 revealed that none of the coping × job dissatisfaction interactions were significant, thereby failing to support Hypotheses 2 and 3.

DISCUSSION

This study revealed that job dissatisfaction is positively related to cigarette and alcohol use among adolescents still in high school. The growing number

Table 3.

Hierarchical Ordered-Probit Regression Results (N = 446)

Predictor variables	Cigarette use			Alcohol use—frequency			Alcohol use—quantity			Illicit drug use		
	$\Delta\chi^2$	ΔPseudo-R^2	b	$\Delta\chi^2$	ΔPseudo-R^2	b	$\Delta\chi^2$	ΔPseudo-R^2	b	$\Delta\chi^2$	ΔPseudo-R^2	b
Step 1:	21.49**	.068		12.16+	.030		21.03**	.051		8.82	.038	
Gender[a]			.19			−.11			−.37**			−.10
Age			.13			.10			.01			.16
School grade[b]			−.09			.14			.22			.01
School attended[c]			.17			.11			.03			.13
Mother's education			−.01			.02			−.01			−.03
Father's education			−.09**			−.05*			−.03			−.04
Family income			−.01			.02			.03			.08
Step 2:	12.10**	.035		21.50**	.056		16.48**	.037		.87	.003	
Job dissatisfaction (JD)			.15*			.14*			.13*			−.02
Active coping (ACT)			−.18*			−.17*			−.18**			−.08
Avoidant coping (AVD)			.17+			.32**			.24**			.01
Step 3:	2.00	.006		1.61	.004		3.32	.008		.006	.000	
JD × ACT			−.01			.09			.09			.00
JD × AVD			−.12			−.08			−.15			−.01

[a]0 = Male, 1 = Female.
[b]0 = 11th grade, 1 = 12th grade.
[c]0 = School 1, 1 = School 2.
$^+p < .10$, $^*p < .05$, $^{**}p < .01$.

of high school students in the work force in conjunction with the present results indicate that employment represents a major social role influencing the health-related behaviors of individuals before they reach adulthood. Therefore, when developing and testing etiologic models of adolescent substance use, researchers need to broaden their focus and consider processes associated with work roles. Prior research on adolescent substance use has typically considered predictors emanating from family, peer, and school contexts (see Hawkins et al., 1992, for a recent review), but has failed to consider predictors emanating from employment contexts. Although the present study only examined job dissatisfaction, future research needs to examine adolescent work roles in a more differentiated and detailed manner. Factors such as motivations for working, coworker and supervisor relationships, and intrinsic work characteristics (e.g., distributive and procedural justice practices, work load, work performance) may be directly and indirectly (via job dissatisfaction) related to adolescent substance use.

There was no support for a moderating influence of coping styles on the relation between job dissatisfaction and substance use. However, significant main effects were revealed, such that avoidant coping was positively related and active coping was negatively related to cigarette and alcohol use. Using community samples of both adults and adolescents, Cooper et al. (in press) also found a positive relation between avoidant coping and alcohol use; the use of other substances was not examined. In contrast to the present results, Cooper et al. did not find a significant relation between active coping and alcohol use. Cooper et al.'s avoidant coping measure assessed coping styles (i.e., were trait-based), whereas their active coping measure assessed coping responses to a specific stressor. Thus, these researchers concluded that their null results for active coping reflected the fact that stressor-specific coping measures may have limited ability to predict global measures of alcohol and other substance use. Our results support Cooper et al.'s hypothesis because both coping measures used in the present study assessed coping styles and both were related to global measures of cigarette and alcohol use. The methodological implication for future research is that traitlike measures of coping may be better predictors of global measures of substance use. Future research on adolescents that include both traitlike and stressor-specific measures of coping, and global and stressor-specific substance use measures, may facilitate a more comprehensive assessment of stress-coping–substance use interrelations.

Although coping styles did not influence the magnitude of the relationship between job dissatisfaction and substance use among adolescents, future research should consider other potential moderator variables. Research on adults has supported the general hypothesis that the relationship between job stress and alcohol use is stronger in some subgroups. For example, Frone et al. (1993, 1995) found that the relationship between job stress and alcohol use was

moderated by tension-reduction expectancies and by the psychological salience of the job role.

Finally, our findings and conclusions regarding the relationship of job dissatisfaction and coping styles to substance use are the product of using a linear regression model. Future research using dynamic, nonlinear models based on chaos or catastrophe theories might provide further insight into these relationships (e.g., Brown, 1995; Ehlers, 1992). Chaos and catastrophe theories are beginning to address the dynamic, nonlinear processes that comprise complex biological, behavioral, emotional, and social systems.

ACKNOWLEDGMENTS

Preparation of this manuscript was supported by the National Institute on Alcohol Abuse and Alcoholism through a Scientist Development Award (K21-AA00194) to the first author and a research grant (R01-AA07861) to the second author.

REFERENCES

AIKEN, L. S., and WEST, S. G. (1991). *Multiple Regression: Testing and Interpreting Interactions*. Newbury Park, CA: Sage.

ALDRICH, J. H., and NELSON, F. D. (1984). *Linear Probability, Logit, and Probit Models*. Newbury Park, CA: Sage.

ALVA, S. A. (1995). Psychological distress and alcohol use in Hispanic adolescents. *J. Youth Adolesc.* 24: 481–487.

ASELTINE, R. H., JR., and GORE, S. (1993). Mental health and social adaptation following the transition from high school. *J. Res. Adolesc.* 3: 247–270.

BACHMAN, J. G., and SCHULENBERG, J. (1993). How part-time work intensity related to drug use, problem behavior, time use, and satisfaction among high school seniors: Are these consequences or merely correlates? *Dev. Psychol.* 29: 220–235.

BROWN, C. (1995). *Chaos and Catastrophe Theories*. Thousand Oaks, CA: Sage.

CARMODY, T. P. (1992). Affect regulation, nicotine addiction, and smoking cessation. *J. Psychoactive Drugs* 24: 111–122.

CHESNEY, M. A. (1991). Women, work-related stress, and smoking. In M. Frankenhaeuser, U. Lundberg, and M. Chesney (Eds.), *Women, Work, and Health: Stress and Opportunities* (pp. 139–155). New York, NY: Plenum Press.

COOPER, M. L., FRONE, M. R., RUSSELL, M., and MUDAR, P. (1995). Drinking to regulate positive and negative emotions: A motivational model of alcohol use. *J. Pers. Soc. Psychol.* 69: 990–1005.

COOPER, M. L., FRONE, M. R., RUSSELL, M., and PEIRCE, R. S. (in press). Gender, stress, coping, and alcohol use. In R. Wilsnack and S. Wilsnack (Eds.), *Gender and Alcohol*. Piscataway, NJ: Rutgers University Press.

COOPER, M. L., RUSSELL, M., SKINNER, J. B., FRONE, M. R., and MUDAR, P. (1992). Stress and alcohol use: Moderating effects of gender, coping, and alcohol expectancies. *J. Abnorm. Psychol.* 101: 139–152.

EDWARDS, J. R. (1988). The determinants and consequences of coping with stress. In C. L. Cooper and R. Payne (Eds.), *Causes, Coping, and Consequences of Coping with Stress at Work*. New York, NY: Wiley.

EHLERS, C. L. (1992). The new physics of chaos: Can it help us understand the effects of alcohol? *Alcohol Health Res. World* 16: 267–272.

ENDLER, N. S., and PARKER, J. D. A. (1994). Assessment of multidimensional coping: Task, emotion, and avoidance strategies. *Psychol. Assess.* 6: 50–60.

FRONE, M. R., COOPER, M. L., and RUSSELL, M. (1994). Stressful life events, gender, and substance use: An application of tobit regression. *Psychol. Addict. Behav.* 8: 59–69.

FRONE, M. R., RUSSELL, M., and COOPER, M. L. (1993). Relationship of work-family conflict, gender, and alcohol expectancies to alcohol use/abuse. *J. Organ. Behav.* 14: 545–558.

FRONE, M. R., RUSSELL, M., and COOPER, M. L. (1995). Job stressors, job involvement, and employee health: A test of identity theory. *J. Occup. Organ. Psychol.* 68: 1–11.

GREENE, W. H. (1993). *Econometric analysis* (2nd ed.). New York, NY: Macmillan.

GREENE, W. H. (1995). *LIMDEP: User's Manual and Reference Guide* (Version 7.0). Bellport, NY: Econometric Software.

HAWKINS, J. D., CATALANO, R. F., and MILLER, J. Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention. *Psychol. Bull.* 112: 64–105.

HUSSONG, A. M., and CHASSIN, L. (1994). The stress-negative affect model of adolescent alcohol use: Disaggregating negative affect. *J. Stud. Alcohol* 55: 707–718.

JAYARATNE, S. (1993). The antecedents, consequences, and correlates of job satisfaction. In R. T. Golembiewski (Ed.), *Handbook of Organizational Behavior*. New York, NY: Dekker.

KRAHN, H. (1991). Youth employment. In R. Barnhorst and L. C. Johnson (Eds.), *The State of the Child in Ontario*. Toronto: Oxford University Press.

LAITILA, T. (1993). A pseudo-R^2 measure for limited and qualitative dependent variable models. *J. Econ.* 56: 341–356.

LIAO, T. F. (1994). *Interpreting Probability Models: Logit, Probit, and Other Generalized Linear Models*. Newbury Park, CA: Sage.

LOCKE, E. A. (1976). The nature and causes of job satisfaction. In M. D. Dunnette (Ed.), *Handbook of Industrial and Organizational Psychology*. Chicago, IL: Rand McNally.

MARTIN, J. K., and ROMAN, P. M. (1996). Job satisfaction, job reward characteristics, and employees' problem drinking behavior. *Work Occup.* 23: 4–25.

MENAGHAN, E. G. (1983). Individual coping efforts: Moderators of the relationship between life stress and health outcome. In H. B. Kaplan (Ed.), *Psychosocial Stress: Trends in Theory and Research*. New York, NY: Academic Press.

MORTIMER, J. T., and SHANAHAN, M. J. (1994). Adolescent work experience and family relationships. *Work Occup.* 21: 369–384.

MURRAY, D. M., and PERRY, C. L. (1987). The measurement of substance use among adolescents: When is the 'bogus pipeline' method needed? *Addict. Behav.* 12: 225–233.

STEINBERG, L. D. (1982). Jumping off the work experience bandwagon. *J. Youth Adolesc.* 11: 183–205.

TSCHANN, J. M., ADLER, N. E., IRWIN, C. E., JR., MILLSTEIN, S. G., TURNER, R. A., and KEGELES, S. M. (1994). Initiation of substance use in early adolescence: The roles of pubertal timing and emotional distress. *Health Psychol.* 13: 326–333.

WAY, N., STAUBER, N. Y., NAKKULA, M. J., and LONDON, P. (1994). Depression and substance use in two divergent high school cultures: A quantitative and qualitative analysis. *J. Youth Adolesc.* 23: 331–357.

WELTE, J. W., and RUSSELL, M. (1993). Influence of socially desirable responding in a study of stress and substance use. *Alcoholism: Clin. Exp. Res.* 17: 758–761.

WILLS, T. A., and SHIFFMAN, S. (1985). Coping and substance use: A conceptual framework. In S. Shiffman and T. A. Wills (Eds.), *Coping and Substance Use*. New York, NY: Academic Press.

WINTERS, D. C., STINCHFIELD, R. D., HENLY, G. A., and SCHWARTZ, R. H. (1991). Validity of adolescent self-reports of alcohol and other drug involvement. *Int. J. Addict.* 25: 1379–1395.

RESUMEN

Este estudio es una extensión de la investigación previa de estrés al hacer frente al uso de substancias entre los adolescentes al examinar el contexto del empleo. Específicamente, este estudio examina la relación de la falta de satisfacción en el trabajo al el uso de substancias y el potencial de la influencia moderadora de los estilos activo y evasivo de enfrentar la situación. La información se obtuvo de 446 estudiantes de preparatoria empleados. Los análisis de regresión de probidad ordenada revelaron que la falta de satisfacción en el trabajo estaba positivamente relacionada al uso del cigarrillo y el alcohol pero no al uso de drogas ilegales. Los estilos de enfrentar las situaciones no moderaron la relación entre la falta de satisfacción en el trabajo y el uso de substancias. Sin embargo, los estilos de enfrentar las situaciones tuvieron relaciones de efecto principal significativas al uso de substancias. El enfrentar las situaciones activamente estaba negativamente relacionado y el enfrentar las situaciones evasivamente estaba positivamente relacionado con ambos usos del cigarrillo y el alcohol. Ninguno de los estilos de enfrentar las situaciones estaba relacionado al uso de drogas ilegales.

RÉSUMÉ

Cette étude pousse plus loin la recherche précédente concernant la relation étroite entre le stress et la prise de substances nocives parmi les adolescents, en observant la situation d'emploi. Cette étude a considéré de façon précise que l'insatisfaction dans le travail est étroitement liée à la prise de substances nocives et l'éventuelle influence modératrice de mode de vie actif ou passif face aux problèmes. On s'est basé sur des donnés reçues de 446 étudiants d'école secondaire exerçant un emploi. Une enquête méthodique sur des cas de régression a révèlé que l'insatisfaction dans le travail était définitivement liée à la consommation de cigarettes et d'alcool mais non pas à la prise de stupéfiants. Quelque soit l'attitude par rapport aux problèmes, cela ne changeait en rien la relation entre l'insatisfaction dans le travail et la prise de substances nocives. Cependant le style de vie avait beaucoup d'influence en ce qui con-

cerne la prise de substances nocives. Une prise de position positive entrainait généralement une relation négative et une prise de position passive entrainait généralement une relation positive en ce qui concerne la consommation de cigarettes et d'alcool. Aucune de ces deux prises de position n'était étroitement liée à la prise de stupéfiants.

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Substance Use & Misuse, 32(5), 587–607, 1997

Measurements, Instruments, Scales, and Tests

Validation of a Measure of Excessive Drinking: Frequency per Year That BAL Exceeds 0.08%

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ABSTRACT

Although self-report data are generally evaluated as reliable, validity estimates for self-reported drinking behavior are not as favorable. A new method of measurement addressing problems currently associated with the questionable validity of self-report drinking information is introduced. Study 1 tests the correspondance between the new measure (occasions per year blood alcohol level exceeded 0.08%), traditional self-report measures, and laboratory alcohol consumption. The novel measure correlated most strongly with volume of alcohol consumed in the laboratory compared to the traditional measures. In Study 2 the novel measure was favored over a traditional measure when discriminating between the presence and absence of problem-drinking symptoms.

Key words. Assessment of drinking behavior; Excessive alcohol consumption; Risk for "alcohol abuse"

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INTRODUCTION

The issue of self-report in the alcohol field has been the subject of much discussion over the past two decades. Despite the widely held doubt concerning the accuracy of consumption estimates obtained from users and "abusers" of alcohol, there is empirical support for such procedures. When self-report information is collected in a research or clinical setting from subjects who are alcohol-free and assured of confidentiality, it is generally evaluated as reliable (O'Farrell and Maisto, 1987; Sobell and Sobell, 1986, 1990). For example, self-report alcohol consumption information provided by alcohol misusers was demonstrated to be more accurate than information collected from official records or collateral reports (O'Farrell and Maisto, 1987; Sobell and Sobell, 1986). More recent investigations have thus focused on the identification of research and clinical features which may optimize or potentially impinge on the accuracy of information obtained from self-reports (Sobell et al., 1992). Despite great progress in this area, a set of concerns associated with the validity of self-reports remain (Baker and Brandon, 1990) (Table 1). Although researchers have now determined who to ask when estimates of alcohol consumption are required, exactly what is asked and how it is asked are important considerations that have received less attention.

Baker and Brandon (1990) reviewed the current concerns associated with the validity of self-report measures and suggested that self-report constructs are highly susceptible to mismatches between theoretical assumptions and the actual construct being measured. The task of developing accurate descriptive measures of alcohol consumption has become complicated with the recognition of the multivariate nature of alcoholism and the likelihood that multiple etiological factors differentially influence various aspects of drinking behavior (e.g., Pihl and Peterson, 1992). Furthermore, the recent emergence of theories on the etiology of this heterogeneous disorder has been relatively unparalleled by the validation of measures which accurately reflect relevant facets of alcohol-related behavior. For example, a wealth of data is available to suggest that aspects of drinking behaviour may be influenced by a *sensitivity* to the reinforcing properties of alcohol (Cohen, 1974; Finn and Pihl, 1988; Wilson and Nagoshi, 1988; Davis, 1988; Tartar et al., 1990; Nagoshi et al., 1986; Chan, 1986; Crabbe, 1984), and certain of these reinforcing properties have been demonstrated to occur only following consumption of doses of alcohol in the legally intoxicating range (Stewart et al., 1992). Therefore, it seems that certain dimensions of drinking behavior, such as frequency of drinking to intoxication, may be particularly interesting to professionals in research and clinical settings who wish to track behavioral indices of imputed vulnerability to "abuse." In contrast, alternative, more commonly-used measures of drinking behavior may, in fact, mask unhealthy drinking patterns.

Table 1.

Concerns Currently Associated with the Use of Self-Report in the Alcohol Field as Reviewed by Baker and Brandon (1990)

Concern	Description	Recommendation	Reference
Problem with theory	Potential for incorrect modeling of construct	Selection of constructs within the context of a well-stated nomological network	Cronbach and Meehl (1955)
Construct not shared by subject	Mismatch between experimenter and subject interpretation of construct	Extensive pilot testing and thorough subject debriefing	Bem and Allen (1974)
Item wording	Subtle differences in wording have potential to influence information being collected	Extensive pilot testing using items which are phrased differently and provide subjects with criterion levels if they are asked to make judgments	Shrauger and Osberg (1981)
Response reactivity	Consequences of subject response will influence information obtained or subsequent behavior	Context of test administration should be such that subjects are motivated to perform accurately.	Webb et al. (1966)
Multidetermination of responses	Other sources of variance in measurement must be identified and accounted for (e.g., social desirability)	Maximize familiarity with response systems, careful item wording, subject debriefing, multitrait-multimethod testing, use of statistical techniques to combine and analyze data	Wiggins, (1973), Campbell and Fiske (1959), Meehl (1954)
Response desynchrony	Concordance between two response systems may change over time due to differences in threshold of elicitation, half-lives, level of automaticity (e.g., affect and memory)	Extensive pilot testing to determine the latency, threshold, and duration of different response systems. Item wording that may facilitate recall of past behaviors and states	Lang et al. (1983), Rachman and Hodgson (1974)

The most common method for assessing alcohol consumption is a self-report weekly quantity/frequency measurement in which individuals are asked to provide information regarding their typical frequency of drinking occasions per week and the amount of alcohol they generally consume on those occasions (Calahan et al., 1969). Weekly alcohol consumption is calculated by multiplying these frequency and quantity estimates (e.g., Peterson et al., 1993). This method of assessing the typical level of alcohol consumption has been shown to be quite reliable (Edwards et al., 1973). However, patterns of alcohol consumption may be easily disguised by the product of these two estimates. For example, a "binge drinker" who consumes seven alcoholic beverages within only a few hours on a single weekly occasion yields the same weekly alcohol consumption score as someone who consumes one drink every day of the week (e.g., a glass of wine with dinner). Considering what is known about the dose-dependent effects of alcohol on subjective, behavioral, and psychophysiological responses (Stewart et al., 1992), the factors influencing two such alcohol consumption patterns are most likely distinct. Furthermore, Sobell et al. (1982) found that such a quantity/frequency estimate failed to identify types of drinking occasions that are associated with health risks (e.g., hypertension, cirrhosis).

Researchers have thus found it worthwhile to obtain measures of excessive alcohol consumption in order to obtain estimates of drinking frequency which more accurately reflect potentially unhealthy drinking patterns. However, such measures are complicated by ambiguous or imprecise terminology, alluding to a second major concern regarding the use of self-report estimates in the alcohol field. Several researchers have commented on the resultant susceptibility to misinterpretation of the question being asked (Baker and Brandon, 1990; Mandell, 1983, Sobell and Sobell, 1990). Thus the lack of accuracy in self-report may be an artifact of experimental terminology and not of subject characteristics.

The two methods commonly used to assess frequency of drinking to legal intoxication are to have individuals subjectively estimate the number of times they drink to intoxication on a yearly basis, usually without an objective definition provided for the term "intoxication," or to have individuals estimate the number of times per year that they have consumed enough alcohol such that they should not drive a vehicle. The difficulty with this latter measure is obvious to many. Ability to estimate blood alcohol concentration (BAL) and to judge behavioral impairment due to alcohol intoxication varies widely across individuals (Nicholson et al., 1992) and is often inaccurate as BALs decrease (Gengo et al., 1990; Martin et al., 1991).

A way to minimize the potential for misinterpretation would be to use a measure of excessive drinking frequency which determines the number of occasions an individual has consumed a legally-intoxicating dose of alcohol,

within a specified time period, without having to rely on the subject's understanding of the term "intoxication" or any descriptive term for that matter. For example, it is possible to determine the number of alcoholic beverages an individual must consume to reach a specified intoxication level based on self-report frequency and quantity estimates of alcohol consumption. Blood alcohol concentration after consumption of a known amount of alcohol can be reliably estimated on the basis of body weight, sex, and approximate rate of ingestion. Using a standard BAL chart (O'Brien and Chafetz, 1991), information regarding an individual's body weight can be used to calculate the number of drinks required to reach a legally intoxicating BAL (80 mg of alcohol per 100 mL of blood, expressed as 80% internationally or 8 parts of alcohol per 10,000 parts of blood, expressed as 0.08% in the United States; O'Brien and Chafetz, 1991). Thus, using the BAL chart in combination with self-reported quantity/frequency of drinking estimates, the number of times an individual drinks to a legally intoxicating dose may be easily estimated without having to rely on subjects' interpretations of the term "intoxication."

Vogel-Sprott (1983) commented on the importance of using both frequency and dose measures of alcohol consumption to reflect facets of drinking behavior. She demonstrated that a measure of estimating volume of alcoholic beverage per kilogram body weight was sensitive to certain inherent characteristics of a drinker (such as age and sex) which were not captured by a simple quantity/frequency measure.

A third important issue related to the use of self-report measures in alcohol research concerns whether this measure requires individuals to generalize about their behavior. Often individuals are required to provide average quantity/frequency estimates of their consumption behavior. As Vogel-Sprott acknowledged, her method of assessing consumption behavior (which yields an average estimate) did not allow for the detection of irregular consumption patterns (e.g., special occasions) in which excessive consumption may be more likely to occur. In an investigation of the validity of self-report alcohol consumption measures, Fitzgerald and Mulford (1987) compared survey self-report alcohol consumption rates for a population to official alcohol sales records. They found that the addition of a question regarding atypical drinking occasions to average drinking estimates significantly reduced the gap between self-report and official estimates of consumption. It is apparent that the addition of a "special drinking occasions" measure is helpful in reducing the degree to which individuals are forced to generalize about their behavior and thus appears to achieve more accurate representations of drinking patterns (Fitzgerald and Mulford, 1987).

An alternative to self-report measures of alcohol consumption is to obtain analogue estimates of drinking behavior. Marlatt et al. (1973) used a task to measure ad libitum alcohol consumption in a experimental drinking situation.

Designed originally by Schacther et al. (1968), the task is introduced to subjects as a taste-rating test for which they are required to rate alcoholic and nonalcoholic beverages according to a list of adjectives pertaining to taste. They are instructed to consume as much alcohol as is necessary to complete the test, and are not made aware that the amount of alcohol consumed is being recorded. The taste-rating task appears to be sensitive to differences in problem drinking status: alcoholics have been shown to drink more in the taste-rating task than nonalcoholics, and social drinkers with elevated consumption patterns drink more during this experimental situation than social drinkers with relatively lighter consumption patterns (Marlatt et al., 1973; Lied and Marlatt, 1979). Furthermore, George and his colleagues (1988) found a high correspondence between self-report estimates of average drinks per drinking occasion and volume of alcohol consumed during the laboratory taste-rating task. Thus, quantity consumed during Marlatt's taste-rating task may be used as an external criterion against which other self-report indices of alcohol consumption can be validated.

The present investigation was designed to evaluate the validity of the measure of frequency per year BAL exceeds 0.08% (BAL > 0.08%). This measure appears to satisfy standards for adequate construct validation in that it allows for consistency between theoretical assumptions and real-life phenomena and between experimenter and subject interpretation of terminology (Baker and Brandon, 1990). Furthermore, it includes information regarding two important situational dimensions of drinking behavior: average and special drinking occasions. The novel measure also takes into account body weight as suggested by Vogel-Sprott (1983). We conducted two studies: one to determine validity of the novel measure with respect to reflecting excessive drinking frequency, and a second to determine its validity with respect to reflecting risky drinking behavior or symptoms of problem drinking.

STUDY 1: BAL > 0.08% AS A QUANTITATIVE MEASURE OF EXCESSIVE DRINKING

Using four dependent measures of drinking behavior, the convergent and discriminant validity properties of BAL > 0.08% were evaluated. The convergent validity of the proposed measure was determined by evaluating its correspondance with two traditional measures of excessive drinking frequency and a behavioral measure which has been shown to be sensitive to excessive drinking status. Discriminant validity of the measure was assessed by contrasting the convergence between BAL > 0.08% and the aforementioned variables against the convergence between an average Q/F measure and such measures. Thus, the proposed measure as well as a self-report average quantity/frequency

measure of number of alcoholic drinks consumed per month were correlated with a subjective measure of yearly intoxication for which no criterion for "intoxication" was specified, a subjective measure of yearly intoxication for which "intoxication" was described as having consumed enough alcohol to be unable to drive a vehicle; and ad libitum alcohol consumption in a laboratory setting. It was predicted that BAL > 0.08% would correspond highly to the self-report estimates of subjective intoxication and to the amount of alcohol consumed in the laboratory and more so than the quantity/frequency measure, thus establishing convergent and discriminative validity. Furthermore, it was predicted that the proposed measure would be a more valuable predictor of excessive drinking behavior than the average quantity/frequency measure in that it could account for variance in excessive drinking behavior beyond that accounted for by the quantity/frequency measure.

Method

Subjects

Fifty-seven Caucasian men were recruited through advertisements in two widely circulated Montreal newspapers. The advertisements were featured sporadically throughout a 4-year time period (1990–1993) in the "help wanted" sections of French and English daily papers. They read: "Men between the ages of 18 and 30 interested in participating in alcohol research at McGill University please call 398-6119," or "Hommes de 18 à 30 ans, interessé à participer dans un étude sur l'alcool a l'University de McGill, appelez-nous au 398-6119." Respondents were initially contacted by bilingual experimenters (primarily female undergraduate students) and then screened in a telephone interview to determine age and alcoholic status. Men who were between the ages of 18 and 30 and who had never been treated for any type of "substance abuse" were recruited and scheduled for an appointment. It is worth noting that this sample did not consist of a primarily undergraduate population. Men were recruited as part of a larger subject pool consisting of men reporting various forms of familial alcoholism and a wide range of alcohol and drug consumption patterns. Subjects were instructed to refrain from eating for 4 hours and to refrain from consuming alcohol for 24 hours prior to their participation. Table 2 presents relevant background and current characteristics of the sample.

Procedure

A structured interview and the sham taste-rating task were conducted individually in the laboratory for each participant. All testing sessions occurred between 10:00 and 12:00 A.M. Participants were first informed of the experi-

mental procedure and were told that they could withdraw from the study at any point or could refuse to participate in any of the phases of the experimental protocol. Once they had provided their written informed consent, they were weighed and then underwent the interview with an experimenter. Information regarding drinking behavior was gathered in the following order.

Drinks per Month. Participants were first asked to reveal the number of times per month they consumed alcohol. They were then asked to estimate the average number of drink equivalents they consume on those occasions. One drink was described as consisting of 1.5 ounces of rum, rye, scotch, brandy, gin, vodka, etc; one 12-oz bottle of normal strength beer; 3 ounces of fortified wine; or 5 ounces of table wine (O'Brien and Chafetz, 1991). Average number of drinks per month was calculated by multiplying the initial self-report estimates of number of drinking occasions per month by average estimates of number of alcoholic drinks consumed per occasion.

Participants were then asked to provide similar estimates for occasions when their consumption either exceeded or was less than what they had provided as an average estimate. Subjects were then asked if they would change their responses to the first set of questions (i.e., they were given a chance to modify their average estimates should the addition of the second question lead to greater accuracy). Any reported changes were documented. The length of time that drinking occasions typically lasted was also recorded.

Proposed Measure of Excessive Drinking (BAL > 0.08%). In addition to average quantity/frequency estimates, information from "special occasions" quantity/frequency estimates, rate of consumption estimates, and weight was used to determine frequency (per year) at which each subject reached a BAL of at least 0.08%. For example, one 150-lb subject indicated that he consumed, on average, 3 drinks twice per week over a span of 4 hours. On special occasions, however, he would consume between 8 and 10 drinks over a span of 4 hours. He reported that the frequency of these special drinking occasions was twice monthly. The chart indicates that a male weighing 150 lb would obtain a BAL of approximately 0.261% following the consumption of 8 to 10 alcoholic beverages. To account for the rate of absorption (4 hours), 0.060% was subtracted from the individuals BAL (O'Brien and Chafetz, 1991). Thus, this subject indicated indirectly that he reaches a BAL of 0.201% twice per month. His resulting score on this measure would be 24 (i.e., BAL reaching at least 0.08% 24 times per year) whereas his average estimate of monthly quantity of consumption score (i.e., drinks/mo) would be 24.

Subjective Estimates of Yearly Intoxication. Subjects were then asked to estimate the number of occasions per year that they were "drunk" and the number of times per year that their alcohol intoxication was such that they

should not drive a vehicle. Two separate estimates were obtained and will be subsequently referred to as drunk/yr and drive/yr, respectively.

Ad Libitum Alcohol Consumption. Introduced as a taste-rating task, this drinking measure involved having subjects rate a set of nonalcoholic and alcoholic beverages according to a list of adjectives pertaining to taste. Two nonalcoholic beverages (water and orange juice) and three alcoholic beverages (vodka and orange juice, rum and coke, and rye and ginger ale; 1:4 alcohol to mixer ratio) contained in 500-mL bottles were placed on a table in front of the subject. The beverages were poured into five corresponding plastic cups and placed in front of the bottles. Subjects were given 20 minutes to rate all four beverages (water was not rated but was used to rinse out their mouths) according to 15 different adjectives and were asked to record their ratings as accurately as possible on a taste-rating form. As well, they were told that they were to consume as much of the beverages as was necessary to rate them precisely, and they were welcomed to consume as much as they desired as the beverages would be thown out upon termination of the experiment. The dependent measure for this task was the total volume of alcohol consumed, calculated from the amount of beverage remaining in the glass and bottles containing alcohol.

After completing the taste-rating task, subjects were fully debriefed as to the true purpose of the task and were allowed to leave the laboratory once their BAL was below 0.04%. They were paid $5 per hour for their participation.

Results

Data Analysis

Means and standard deviations for each measure averaged across the entire sample, along with number of observations per variable, appear in Table 2. As indicated in the table, missing data resulted in unequal sample sizes for each variable. Analysis of the distribution of the data indicated that none of the variables were distributed normally and all were significantly positively skewed. Thus, subsequent statistical analyses were performed on logarithmic transformations of the raw data.

Correlations between self-report constructs were all fairly substantial (see Table 3). The new measure representing frequency per year BAL exceeds 0.08% was more strongly correlated than the self-report average monthly alcohol consumption measure with subjective measures of frequency of drinking to intoxication, although a statistical test of equality of the correlations did not reveal that they were significantly different.

Table 2.

Means and Standard Deviations for Selected Subject Characteristics and Five Measures of Alcohol Consumption[a]

Variable	*N*	Mean	Standard deviation
Age	59	22.93	2.82
Years of education[b]	59	14.78	2.68
Weight (kg)	59	72.66	13.69
SES (rank)[c]	59	5.7	1.46
% French speaking (vs English)	59	46.5	
Cigarettes per day	59	10.08	9.96
% Reporting illicit drug use	59	41.00	
BAL > 0.08% per year	57	37.65	50.25
Drinks/mo	56	34.41	35.55
Drunk/yr	58	31.40	49.73
Drive/yr	55	33.31	48.37
Ad libitum consumption in mL	59	43.13	27.64

[a]Descriptive statistics for nontransformed data.
[b]Years of education including 1 year of kindergarten.
[c]Values for socioeconomic status (SES) represent ranked index scores based on father's occupation.

Three separate hierarchical regression analyses for both self-report measures of subjective intoxication (i.e., drunk/yr and drive/yr) and ad libitum alcohol consumption were performed in two-step procedures: 1) drinks/mo was used to predict each dependent measure, then, 2) BAL > 0.08% was added

Table 3.

Correlations between Five Measures of Alcohol Consumption[a]

	Drinks/mo	Drunk/yr	Drive/yr	Ad libitum consumption
BAL > 0.08%	0.77*** (n = 56)	0.78*** (n = 56)	0.78*** (n = 53)	0.49*** (n = 57)
Drinks/mo		0.70*** (n = 55)	0.72*** (n = 52)	0.36* (n = 56)
Drunk/yr			0.86*** (n = 55)	0.36* (n = 57)
Drive/yr				0.33 (n = 55)

[a]Analysis performed on logarithmic transformation of raw data.
***$p < .0001$.
*$p < .01$.

to the model to determine whether it accounts for variance in the measures of subjective intoxication over and above that accounted for by the first independent variable. Table 4 presents results from this analysis, including the parameter estimates (B), and partial squared correlations when the second independent variable was included in the model. Analyses indicated that the first measure (i.e., drinks/mo) accounted for a significant proportion of the variance in all three dependent measures. However, when BAL > 0.08% was added to the model, drinks/mo was no longer a significant predictor of excessive drinking or drinking in the laboratory, while the new measure retained significant predictive power. Furthermore, in the case of each dependent measure, BAL > 0.08% significantly improved the goodness of fit of the model. Benchmarking techniques were used to statistically contrast the goodness of fit of models containing and excluding the proposed excessive drinking variable.

Table 4.

Summary Table for Results of Hierarchical Regression Analysis

Independent variable:	B	$R_{partial}$	$R_{sequential}$	t-value	p
Analysis 1: Drunk/yr					
Step I:					
Drinks/mo	.96	.48	.48	7.05	.0001
Step II:					
Drinks/mo	.34	.05	.48	1.71	N.S.
BAL > 0.08%	.46	.29	.63	4.57	.0001
Total: $F(2,53) = 44.66$, $p < .0001$, $R^2 = 0.63$.					
Analysis 2: Drive/yr					
Step I:					
Drinks/mo	1.02	.52	.52	7.38	.0001
Step II:					
Drinks/mo	.40	.08	.52	2.12	.040
BAL > 0.08%	.44	.26	.65	4.14	.0001
Total: $F(2,53) = 44.54$, $p < .0001$, $R^2 = 0.65$					
Analysis 3: Ad Libitum Alcohol Consumption					
Step I:					
Drinks/mo	.22	.13	.13	2.82	.007
Step II:					
Drinks/mo	−.06	.00	.13	−.31	N.S.
BAL > 0.08%	.18	.13	.24	2.85	.007
Total: $F(2,53) = 8.55$, $p < .001$, $R^2 = 0.24$					

STUDY 2: PREDICTING PROBLEM DRINKING

Method

Subjects and Procedure

Seventy-nine Caucasian men were recruited for participation using identical subject selection criteria to Study 1 (see Study 1 for a more detailed description of subject recruitment procedure). Table 5 presents background and current information on the participants of this second study.

Prior to their entrance in the laboratory, subjects underwent a brief interview and questionnaire session in which information regarding various aspects of drinking behavior was gathered. As described in the Methods section of Study 1, average estimates of monthly quantity/frequency of alcohol consumption and number of times per year individuals reached a BAL greater than 0.08% (calculations based on weight, quantity/frequency estimates, "special occasions" estimates, and duration of drinking occasions estimates) were obtained for each subject. The presence of problem-drinking symptoms was assessed using the brief version of the Michigan Alcoholism Screening Test (MAST; for a review of the reliability and validity properties, see Pokorny et al., 1972). As MAST scores for the entire sample were generally zero (i.e., no identifiable problem-drinking symptoms), the subject sample was divided into two groups based on a cut-off score on the MAST: 1) those reporting no history problem-drinking symptoms (MAST scores equal to zero); or 2) those

Table 5.

Means and Standard Deviations of Selected Subject Characteristics for Study 2[a]

Variable	*N*	Mean	Standard deviation
Age	79	21.65	2.51
Years of education[b]	79	14.63	1.92
Weight (kg)	79	70.58	9.02
% French speaking (vs English)	79	23.0	
% Reporting family history of alcoholism	79	43.0	
Cigarettes per day	79	7.61	8.87
Drug taking occasions per month	79	6.25	9.80
BAL > 0.08% per year	79	60.80	77.10
Drinks/mo	79	42.23	46.17
# Problem drinking symptoms (MAST scores)	79	43.13	27.64

[a]Descriptive statistics for nontransformed data.

[b]Years of education including 1 year of kindergarten.

reporting a recent history of problem-drinking symptoms (i.e., MAST score greater than or equal to 2). Individuals in the problem-drinking-symptoms group thus reported that their drinking behavior had interfered with their occupational, social, or health functioning, or had led to an arrest or consultation with a mental health professional at least once in the past 6 months.

Subjects were paid $5 per hour for their time.

Results

As self-report alcohol consumption estimates were again positively skewed, logarithmic transformations of the raw data were performed. As the dependent measure was converted to a dichotomous variable, logistic regression analysis was performed as the most appropriate statistical method to determine the relative adequacy of the proposed excessive drinking measure in distinguishing between individuals reporting problem-drinking symptoms vs those not reporting any such symptoms. The first analysis included the traditional quantity/frequency estimate. With this single predictor, 68.4% of individuals were classified correctly (93.9% for nonproblem drinkers and 26.7% for those reporting lifetime problem-drinking symptoms). The proposed measure was then added to the equation to determine the relative increase in prediction of problem-drinking symptoms. This initial analysis indicated that problem-drinking status is best predicted by BAL > 0.08%. While the drinks/mo measure on its own predicted 5% of the variance in problem drinking status ($p < 0.05$), the second step in the analysis indicated that this variance, as well as additional variance (9%, $p < .01$), could be accounted for by the new measure. As indicated in Tables 6 and 7, a logistic model including both measures accounted for 15% of group differences [$\chi^2(2) = 13.65$, $p < .001$] and correctly identified 87.76% of individuals not reporting problem-drinking symptoms and 43.33% of those reporting such symptoms (70.89% correctly classified in all). According to this analysis, the proposed measure of excessive drinking con-

Table 6.

Summary Table for Results from Logistic Regression Analysis (classifying those reporting problem drinking symptoms on the brief MAST vs those not reporting any problem drinking symptoms on the brief MAST)

Step	Model	*B*	R^2	χ^2	Probability
1.	Drinks/mo	0.01	.05	3.91	0.05
2.	Drinks/mo	0.01	.02	1.35	N.S.
	BAL > 0.08%	0.02	.09	7.44	0.006
	Total: χ^2 (2) = 13.65, $p < .001$, $R^2 = .15$, % Correctly classified: 70.89				

Table 7.

Percent Correctly Classified Using Two Models

	Model 1	Model 2
No problem drinking symptoms reported	93.88	87.76
Problem drinking symptoms reported	26.67	43.33
Total	68.38	70.89

tained information related to "problem drinking" that was not captured by a self-reported average quantity/frequency measure of alcohol consumption.

DISCUSSION

The measure of excessive alcohol consumption proposed in this study appears to address several of the concerns associated with self-report measures in alcohol research. The number of times an individual reaches intoxication is intuitively favored over an average quantity/frequency estimate because it filters out average daily consumption from excessive consumption and primarily identifies the frequency of "heavier," potentially riskier drinking patterns. In contrast, estimates of consumption from traditional methods may reflect a heterogeneity of drinking behaviors. Furthermore, a measure for which an objective criterion is used to determine excessive drinking appears to be preferable to subjective estimates of frequency of yearly intoxication because it does not rely on subject's interpretation of the term "intoxication." As Mandell suggested, "the wording of the question is very influential in determining the variation in responses" (p. 419, 1983). Finally, accuracy in self-reporting may depend on the degree to which individuals must generalize about their drinking behavior (Fitzgerald and Mulford, 1987). A method of assessment which allows subjects to report on different situational dimensions of drinking behavior (e.g., average vs special drinking occasions) appears important for accuracy in self-reporting.

The intuitive superiority of this measure over traditional measures is supported by the data from the present studies. The results from Study 1 provide information regarding the construct validity of this new measure of excessive alcohol consumption. Although the measure is based on self-report estimates of consumption, it is not based on a subjective evaluation of the amount required to reach intoxication. The correlations presented in Table 3 indicate that this new measure of intoxication correlated strongly with other self-report estimates of alcohol consumption and frequency of intoxication estimates. However, this measure of excessive drinking was found to correlate more with

subjective estimates of intoxication than did an average quantity/frequency measure. These findings may reflect the general accuracy of subjects in reporting on their own drinking behavior and the tendency for their average quantity/frequency estimates to mask patterns of excessive alcohol consumption. Interestingly, despite the high correlation between the new measure of yearly intoxication and the subjective estimates of yearly intoxication, the measures for which a criterion for "intoxication" was specified yielded greater estimates than the subjective measures for which no criterion was used (Table 2). This trend in the data may indicate that individuals underestimate their excessive drinking when questions regarding their behavior are presented in an imprecise and ambiguous manner. It is suggested that researchers attempt to avoid terminology which requires any form of interpretation on the part of the subject to optimize accuracy in self-reporting of drinking behavior.

The finding that this new measure was the single best predictor of ad libitum alcohol consumption in a laboratory setting has important implications. As alcoholics and individuals with elevated quantity and frequency of alcohol consumption are known to consume more alcohol during a sham taste-test than nonproblem drinkers reporting lower quantity and frequency drinking (Marlatt et al., 1973; Lied and Marlatt, 1979), and individuals demonstrating sensitivity to the reinforcing effects of alcohol consume more on this taste-test (Conrod et al., submitted; Pihl et al., 1994), the new measure may identify individuals with drinking patterns that are more likely to become problematic. Specifically, this measure may be quantifying the frequency with which individuals consume alcohol to experience its reinforcing properties, a tendency which has been previously associated with symptoms of alcohol "abuse." In contrast, an average quantity/frequency measure may reflect a variety of aspects of drinking behavior which may be less associated with risk for "abuse." The finding that information on self-reported drinks per month (the average measure) did not classify those reporting vs not-reporting symptoms of problem drinking on the brief MAST as adequately as when BAL $>$ 0.08% was used supports this notion (Study 2). The new measure appears accurate in reflecting frequency of excessive and unhealthy alcohol consumption occasions which are more characteristic of problem drinkers than average social drinkers. That only a moderate protion of variance in problem-drinking status was accounted for is expected considering reports from recent investigations on the prediction of drinking-related problems which indicate that impulsive, disinhibited, and/or antisocial personality is the most robust predictor of problem-drinking symptoms (Pulkkinen and Pitkänen, 1994; Harford and Parker, 1994; Ohannessian and Hesselbrock, 1995; Conrod et al., submitted). Findings from such studies suggest that the prediction of problem drinking solely from excessive drinking measures may only be moderate and further depicts the multidetermined

nature of alcohol-related measures. It is thus suggested that this issue be addressed according to Baker and Brandon's (1990) recommendations that are outlined in Table 1 (e.g., multitrait-multimethod testing, etc.). Furthermore, it is worth noting at this point that the fact that nonlinear logistic regression analysis was required for the present investigation of problem-drinking symptoms does not imply that the future prediction of this variable should necessarily follow the same analytic technique. The addition of other predictive variables to non-linear dynamical systems equations (Barton, 1994; Mandel, 1995) may prove to be more accurate for the prediction of problem-drinking symptoms as such techniques would allow for the modeling of MAST scores as a continuous variable in the context of a feedback loop rather than as a static, categorical variable as in the present investigation.

This proposed measure has both clinical and research implications. A popular method of investigating risk factors for alcoholism is to study trait personality, behavioral, and cognitive antecedents to "alcohol abuse" and to analyze their correspondence with alcohol consumption patterns in nonalcoholic samples (e.g., Peterson et al., 1993; Nagoshi et al., 1991; Cloninger et al., 1988). The implications of the present findings are that such factors may only correspond to specific alcohol consumption patterns bearing potential to become problematic. Without properly validated measures of such aspects of drinking behavior, the relationship between antecedent factors and drinking behavior may be missed. Thus, the consideration of different measures of drinking behavior when attempting to delineate the etiology of alcohol misuse is essential. In the evaluation of alcoholism treatment effectiveness, this new measure may prove to be an important assessment tool, particularly for those interventions in which abstinence, per se, is not a treatment objective (e.g., the controlled drinking approach advocated by Miller et al., 1992). This measure may be used by clinicians to assist with early identification and subsequent handling of problematic alcohol consumption patterns before the emergence of more overt indicators such as social, occupational, legal, and health complications.

Although the results from the present studies demonstrated a superiority of this new measure, ensuing research in this area may lead to the development of a measure or a system of measures which is more accurate and precise in reflecting risky drinking behavior. Several important "next logical steps" are advised. First, the accuracy of this new measure may be improved if it is combined with other approaches to collecting drinking behavior information. For example, could incremental validity be demonstrated when frequency of drinking to BAL greater than 0.08% is used based on data provided by a Time-Line analysis of drinking behavior (Sobell et al., 1982)? As subjects in Study 2 were differentiated based on the presence or absence of problem-drinking symptoms, it remains to be determined whether the new measure correlates

with MAST scores in a sample with a broader range of problem-drinking symptoms. Furthermore, the order in which the questions were administered in Study 1 might have influenced the correspondence between the three self-report methods of assessment. Analysis of correspondence between drinking estimates when they are obtained independently (e.g., on separate testing days) may indicated that they correspond less than what is presently reported. Another step in the determination of the validity of this measure would be to evaluate its predictive properties. Specifically, does the new measure predict emergence of "alcohol abuse" or dependence in a longitudinal fashion? Furthermore, the proportion of variance in problem-drinking criteria accounted for by the new measure was only moderate. Further research should explore possible variables which improve prediction of these criteria over and above variance accounted for by frequency of excessive drinking (as measured by the novel instrument) or which interact with this variable to improve predictions. The influence of alcohol expectancies on the accuracy of self-reporting was not investigated in the present study. Recently Werner et al. (1993) found that certain alcohol expectancies were associated with reports of "heavier" drinking and alcohol-use-related health problems. Whether individual differences in the evaluation of alcohol effects are associated with reduced accuracy in self-reported drinking behavior is a question which warrants further exploration. Finally, individual differences in the rate of alcohol absorption were obviously not accounted for in the determination of frequency per year that BAL exceeds 0.08%. As variation in the metabolism of alcohol has been associated with genetic risk for alcoholism (Tartar et al., 1990; Thomasson and Li, 1993; Wilson and Nagoshi, 1988) and elevated alcohol consumption patterns, these factors should be considered in ensuing investigations.

ACKNOWLEDGMENTS

We would like to thank individuals from at the Douglas Hospital-McGill University Alcohol Research Center in subject recruitment and the Medical Research Council for funding this research.

REFERENCES

BAKER, T. B., and BRANDON, T. H. (1990). Validity of self-report in basic research. *Behav. Assess.* 12: 33–51.

BARTON, S. (1994). Chaos, self-organization, and psychology. *Am. Psychol.* 3: 747–755.

BEM, D. J., and ALLEN, A. (1974). On predicting some of the people some of the time: The search for cross-situational consistencies in behavior. *Psychol. Rev.* 81(6): 506–520.

CALAHAN, D., CISIN, I. H., and CRIOSSLEY, H. M. (1969). *American Drinking Practices: A National Study of Drinking Behavior and Attitudes*. New Brunswick, NJ: Rutgers Center of Alcohol Studies.

CAMPBELL, D. T., and FISKE, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychol. Bull.* 56: 81–105.

CHAN, A. W. (1986). Racial differences in alcohol sensitivity. *Alcohol Alcoholism* 21(1): 93–104.

CLONINGER, C. R., SIGVARDSSON, S., and BOHMAN, M. (1988). Childhood personality predicts alcohol abuse in young adults. *Alcoholism: Clin. Exp. Res.* 12(4): 494–505.

COHEN, S. (1974). The many causes of alcoholism. *Drug Abuse Alcoholism Newsl.* 4(3): 1–4.

CONROD, P. J., PETERSON, J. B., and PIHL, R. O. (submitted). Disinhibited personality and sensitivity to alcohol reinforcement as predictors of drinking behavior. *Alcoholism: Clin. Exp. Res.*

CRABBE, J. C. (1984). Pharmacogenetic strategies for studying alcohol dependence. *Alcohol* 1(3): 185–191.

CRONBACH, L J., and MEEHL, P. E. (1955). Construct validity in psychological tests. *Psychol. Bull.* 52: 281–302.

DAVIS, J. W. (1988). Use and misuse of alcohol in persons of advanced age: Physiological and pathological considerations. *Pride Inst. J. Long Term Home Health Care* 7(2): 18–21.

EDWARDS, G., HENSMAN, C., and PETO, J. (1973). Drinking in a London suburb: Reinterview of a subsample and assessment of response consistency. *Q. J. Stud. Alcohol* 34: 1244–1254.

FINN, P. R., and PIHL, R. O. (1988). Risk for alcoholism: A comparison between two different groups of sons of alcoholics on cardiovascular reactivity and sensitivity to alcohol. *Alcoholism: Clin. Exp. Res.* 12(6): 742–747.

FITZGERALD, J. L., and MULFORD, H. A. (1987). Self-report validity issues. *J. Stud. Alcohol* 48(3): 207–210.

GENGO, F. M., GABROS, C.,. STRALEY, C., and MANNING, C. (1990). The pharmacodynamics of ethanol: Effects on performance and judgement. *J. Clin. Pharmacol.* 30: 748–754.

GEORGE, W. H., PHILLIPS, S. M., and SKINNER, J. B. (1988). Analogue measurement of alcohol consumption: Effects for task type and correspondence with self-report measurement. *J. Stud. Alcohol* 49(5): 450–454.

HARFORD, T. C., and PARKER, D. A. (1994). Antisocial behavior, family history, and alcohol dependence symptoms. *Alcoholism: Clin. Exp. Res.* 18(2): 265–268.

LANG, P. J., LEVIN, D. N., MILLER, G. A., and KOZAK, M. J. (1983). Fear behavior, fear imagery, and the psychophysiology of emotion: The problem of affective response integration. *J. Abnorm. Psychol.* 92: 276–306.

LIED, E. R., and MARLATT, G. A. (1979). Modeling as a determinant of alcohol consumption: Effect of subject sex and prior drinking history. *Addict. Behav.* 4: 47–54.

MANDEL, D. R. (1995). Chaos theory, sensitive dependence and the logistic equation. *Am. Psychol.* 50(2): 106–107.

MANDELL, W. (1983). Types and phases of alcohol dependence. In M. Galanter (Ed.), *Recent Developments in Alcoholism: Vol. 3* (pp. 415–448). New York, NY: Plenum Press.

MARLATT, G. A., DEMMING, B., and REID, J. B. (1973). Loss of control drinking in alcoholics: An experimental analogue. *J. Abnorm. Psychol.* 81(3): 233–241.

MARTIN, C. S., ROSE, R. J., and OBREMSKI, K. M. (1991). Estimation of blood alcohol concentrations in young male drinkers. *Alcoholism: Clin. Exp. Res.* 15(3): 494–499.

MEEHL, P. E. (1954). *Clinical Versus Statistical Prediction: A Theoretical Analysis and a Review of the Evidence*. Minneapolis, MN: University of Minnesota Press.

MILLER, W. R., LECMAN, A. L., and DELANY, H. D. (1992). Long-term follow-up of behavioral self-controlled training. *J. Stud. Alcohol* 53(3): 249–261.

NAGOSHI, C. T., WILSON, J. R., and PLOMIN, R. (1986). Use of regression residuals to quantify individual differences in acute and tolerance to alcohol. *Alcoholism: Clin. Exp. Res.* 10(3): 343–349.

NAGOSHI, C. T., WILSON, J. R., and RODRIGEZ, L. A. (1991). Sensitivity, sensations seeking, behavioral and emotional responses to alcohol. *Alcoholism: Clin. Exp. Res.* 15(4): 661–667.

NICHOLSON, M. E., WANG, M., AIRHIHENBUWA, C. O., MAHONEY, B. S., CRISTINA, R., and MANEY, D. W. (1992). Variability in behavioral impairment involved in the rising and falling BAL curve. *J. Stud. Alcohol* 53: 349–356.

O'BRIEN, R., and CHAFETZ, M. (1991). In G. Evans (Ed.), *The Encyclopedia of Alcoholism*, 2nd ed. New York, NY: Facts of File.

O'FARRELL, T. J., and MAISTO, S. A. (1987). The utility of self-report and biological measures of alcohol consumption in alcoholism treatment outcomes studies. *Adv. Behav. Res. Ther.* 9: 91–125.

OHANNESSIAN, C. M., and HESSELBROCK, V. M. (1995). Temperamental and personality typologies in adult offspring of alcoholics. *J. Stud. Alcohol* 56: 318–327.

PETERSON, J. B., PIHL, R. O., SEGUIN, J. R., FINN, P. R., and STEWART, S. H. (1993). Heart-rate reactivity and alcohol consumption among sons of male alcoholics and sons of nonalcoholics. *J. Psychiatr. Neurosci.* 18(4): 190–198.

PIHL, R. O., GIANCOLA, P. R., and PETERSON, J. B. (1994). Cardiovascular reactivity as a predictor of alcohol consumption in a taste test situation. *J. Clin. Psychol.* 50(2): 280–286.

PIHL, R. O., and PETERSON, J. B. (1992). Etiology. *Annu. Rev. Addict. Res. Treatment* pp. 153–175.

POKORNY, A. D., MILLER, B. A., and KAPLAN, H. B. (1972). The brief MAST: A shortened version of the Michigan Alcoholism Screening Test. *Am. J. Psychiatry* 129(3): 342–345.

PULKKINEN, L., and PITKÄNEN, T. A. (1994). Prospective study of the precursors to problem drinking in young adulthood. *J. Stud. Alcohol* 55: 578–587.

RACHMAN, S., and HODGSON, R. (1974). Synchrony and desynchrony in fear and avoidance. *Behav. Res. Ther.* 12: 311–318.

SCHACTER, S., GOLDMAN, R., and GORDON, A. (1968). Effects of fear, food deprivation and obesity on eating. *J. Pers. Soc. Psychol.* 10: 91–97.

SHRAUGER, J. S., and OSBERG, T. M. (1981). The relative accuracy of self-predictions and judgements by others in psychological assessment. *Psychol. Bull.* 90(2): 322–351.

SOBELL, L. C., CELLUCCI, T., NIRENBERG, T. D., and SOBELL, M. B. (1982). Do quantity–frequency data underestimate drinking-related health risks? *Am. J. Public Health* 72: 823–828.

SOBELL, L. C., and SOBELL, M. B. (1986). Can we do without alcohol abuser's self-reports? *Behav. Ther.* 7: 141–146.

SOBELL, L. C., and SOBELL, M. B. (1990). Self-report issues in alcohol abuse: State of the art and future directions. *Behav. Assess.* 12: 77–90.

SOBELL, L. C., TONEATTO, T., SOBELL, M. B., LEO, G. I., and JOHNSON, L. (1992). Alcohol abuser's perceptions of the accuracy of their self-reports of drinking: Implications for treatment. *Addict. Behav.* 17(5): 507–511.

STEWART, S. H., FINN, P. R., and PIHL, R. O. (1992). Effects of alcohol on the cardiovascular stress response in men at high risk for alcoholism: A dose response study. *J. Stud. Alcohol* 53: 499–506.

TARTAR, R. E., MOSS, H., and LAIRD, S. B. (1990). Biological markers for vulnerability to alcoholism. In R. L. Collins, K. E. Leonard, and J. S. Searles (Ed.), *Alcohol and the Family: Research and Clinical Perspectives*. New York, NY: Guilford Press, pp. 79–106.

THOMASSON, H. R., and LI, T. (1993). How alcohol and aldehyde dehydrogenase genes modify alcohol drinking, alcohol flushing, and the risk for alcoholism. *Alcohol Health Res. World* 17(2): 167–172.

VOGEL-SPROTT, M. (1983). Response measures of social drinking: Research implications and applications. *J. Stud. Alcohol* 44(5): 817–831.

WEBB, E. J., CAMPBELL, D. T., SCHWARTZ, R. D., and SECHREST, L. (1966). *Unobtrusive Measures: Nonreactive Research in the Social Sciences*. Chicago, IL: Rand McNally.

WERNER, M. J., WALKER, L. S., and GREENE, J. W. (1993). Alcohol expectancies, problem drinking, and adverse health consequences. *J. Adolesc. Health* 14(6): 446–452.

WIGGINS, J. S. (1973). *Personality and Prediction: Principles of Personality Assessment*. New York, NY: Addison-Wesley.

WILLIAMS, G. D., AITKEN, S. S., and MALIN, H. (1985). Reliability of self-reported alcohol consumption in a general population survey. *J. Stud. Alcohol* 48(3): 223–227.

WILSON, J. R., and NAGOSHI, C. T. (1988). Adult children of alcoholics: Cognitive and psychomotor characteristics. *Br. J. Addict.* 83(7): 809–820.

RESUMEN

Aunque los datos de reporte propio son generalmente evaluados como feables, la validez estimada con reporte propio de comportamiento de beber no es tan favorable. Un nuevo metodo de medidas esta introducida para adresar el problema de validez de los reportos propios sobre información de bebida. El primer estudio investiga la corespondencia entre una nueva medida de beber en exceso (veces por año donde el nivel de alcool en la sangre llegua a 0.08%), medidas tradicionales de reporte propio de beber, y consumo de alcool en el laboratorio. La nueva medida correla mejor con el volumen de alcool consumido en el laboratorio que las medidas tradicionales. En el segundo estudio, la neuva medida fue mejor que las medidas tradicionales en discriminar la presencia e ausencia de las sintomas del beber problematico.

RÉSUMÉ

Bien que les données rapportées par le sujet soient généalement considérées comme fiables, les estimations de la validité du comportement vis-à-vis l'alcool décrit par le sujet ne sont pas aussi favorables. Nous présentons une nouvelle méthode de mesure palliant les problèmes couramment associés à la validité douteuse de l'information sur la consommation d'alcool décrite par le sujet. L'étude 1 compare la nouvelle mesure (le nombre d'occasions par année où le niveau d'alcool dans le sang a dépassé 0.08%), les mesures traditionnelles rapportées par le sujet et la consommation d'alcool en laboratoire. La nouvelle mesure a montré une corrélation avec le volume d'alcool consommé en laboratoire bien supérieure aux mesures traditionnelles. Dans l'étude 2, la nouvelle méthode de mesure a été supérieure à la méthode traditionnelle pour discriminer entre la présence et l'absence de symptômes de consommation d'alcool problématique.

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Substance Use & Misuse, 32(5), 609–619, 1997

Student Substance Use

Correlates of Change in Adolescent Alcohol Consumption in Ireland: Implications for Understanding Influences and Enhancing Interventions

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ABSTRACT

Studies of two similar cohorts of students in Ireland in 1984 and 1992 showed a dramatic increase in the consumption of alcohol, especially in the frequency with which students reported being drunk. A comparison of measures obtained at both times showed that there were major changes with regard to beliefs about consequences of alcohol consumption in a direction favorable to consumption as well as increases in the perceived social support for drinking. However, there were no strong indications that changes in problem behavior were associated with the observed increases in drinking patterns. These results are supportive of some explanatory models of initiation to substance use and have associated implications for programs designed to reduce consumption.

Key words. Adolescent drinking; Drinking in Ireland

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INTRODUCTION

Studies seeking to establish the factors associated with substance use among adolescents have utilized a number of strategies to pinpoint the antecedents of such behavior. Longtitudinal studies now testify to the importance of a variety of factors including parental influences (e.g., Vicary and Lerner, 1986), peer influences (e.g., Kandel, 1980; Morgan and Grube, 1991), as well as expectancies regarding consequences (e.g., Leigh, 1989).

However, explanations of substance use are far from complete (Petraitis et al., 1995). In this context, there may be valuable insights to be gained from new methodologies. Thus, information on changes in patterns of drinking over time (time-series studies) may be especially valuable. For example, if it could be established that changes in attitudinal and belief factors were associated with changes in substance use, it would add a significant dimension to understanding changes in substance use. In turn, such findings would give an important indication as to which approaches are most likely to be effective in designing prevention programs.

The present data are drawn from evidence on research on changing patterns of adolescent drinking in Ireland. Below we first describe the main features of alcohol consumption in Ireland. The methodology of the study is then described, followed by a description of the changes in drinking patterns that occurred over 8 years. Some factors associated with these changes are then described and explored.

DRINKING IN IRELAND

The pattern of alcohol consumption in Ireland is characterized by the classic pattern of ambivalence, with a large number of "heavy drinkers" coupled with a significant minority of total abstainers. In terms of average consumption per capita, Ireland is a middle-level consumption country (Conniffe and McCoy, 1993). However, up to one-quarter of the adult population were (at least until recently) total abstainers, while about 6% were drinking at a level that was considered dangerous in terms of the current medical recommendations (O'Connor and Daly, 1985).

In many respects, alcohol consumption among adolescents follows a pattern that mirrors adult drinking patterns. A study of the consumption by 3,000 Dublin adolescents in 1984 showed that while a significant minority had not tried any alcoholic beverage, a minority also had drunk to the point where they felt drunk (Grube and Morgan, 1986). In general, that study showed that the factors associated with consumption were similar to that found in other countries, especially in relation to parental and peer factors. A similar study involv-

ing precisely the same schools and age groups was carried out 8 years later (Morgan and Grube, 1994), with the aim of examining changes in consumption and possible changes in factors associated with such consumption.

METHOD

Sample

For both surveys the sampling frame was the official Department of Education list of postprimary schools in the greater Dublin area. The school were initially randomly selected to participate in the 1984 survey and within each school all students from one class level participated in the survey. Details of the sample are presented in Table 1.

Survey Instruments

The questionnaires in both surveys were designed to measure a wide range of variables relating to drinking. These included past behaviors, attitudes, normative beliefs, expectancy value beliefs, general deviance, as well as sociodemographic characteristics. Subjects were asked if they had ever had a full drink of any alcoholic beverage (beer, cider, wine, or spirits) and if so, how frequently they had consumed alcohol during the last year (not at all—every day) and how many times during the last 12 months they had enough drink to feel drunk (none—every day). Further questions focused on frequency of drinking and being drunk over the last month.

Another series of items sought information on beliefs about the likelihood that drinking will have particular *personal* consequences, as well as the evaluation of these consequences. These beliefs were examined by asking respon-

Table 1.

Samples in 1984 and 1992

	1984	1992
N	2,927	1,983
n of schools	24	22
Gender	48.5% female	49.6% female
Age group:		
13 years or less	17.9%	8.9%
14 years	22.0	26.7
15 years	16.8	13.6
16 years	21.4	21.0
17 years or more	22.0	29.7

dents how likely they thought that each of 11 consequences would occur to them if they were to drink (very likely—very unlikely) and then to evaluate each of these consequences (like very much—dislike very much). Some of these consequences were negative and indicated potentially harmful consequences of alcohol (e.g., getting a hangover), while others were "positive" in the sense that they referred to partially desirable effects of drinking (e.g., feeling relaxed).

The measures of normative beliefs were concerned with the perceptions of the extent to which relevant others drink themselves and with the extent that they approve/disapprove of respondent's drinking. Specifically, students were asked whether their mother, father, best friend, other good friends, students at my school, and students at other schools would disapprove if the respondent were to have two or three drinks of an alcoholic beverage. They were also asked how often each of the these people have drunk over the past 12 months (not at all, one or two times—every day). Problem behavior was measured by asking about the extent to which students had been involved in various kinds of problem behaviors over the last 12 months, including having lied to a teacher, lied to a parent, damaged other people's property, stolen things from a shop, and stolen money.

Survey Administration

It was arranged with the participating schools that all pupils would be tested at the same time and in students' regular classroom settings. The testing was carried out by experienced personnel from the Economic and Social Research Institute and normally without the class teachers being present.

The test–retest reliability was found to be between .55 and .83, depending on the substance (Morgan and Grube, 1991). Furthermore, by inclusion of a fictitious substance, it was possible to establish that overreporting was not a serious problem, since only .3% indicated use of this "substance."

RESULTS AND DISCUSSION

Changes in Consumption of Alcohol by Adolescents, 1984–92

Tables 2 and 3 provide the basis on which comparisons were made on changes in drinking over the 8-year period. Information is given in Table 2 on lifetime prevalence for each age group, that is, the percentage who indicated that they had consumed any alcoholic drink in their lives, as well as current drinking of various alcoholic beverages. Table 3 shows a comparison of the prevalence of reporting feeling drunk as well as typical amount consumed (percent having three drinks or more) on a drinking occasion.

Table 2.

Comparison of Lifetime and Current Drinking in 1984 and 1992[a]

			Current drinking[c]					
	Lifetime prevalence[b]		1984			1992		
Age group	1984	1992	Beer	Wine	Spirits	Beer	Wine	Spirits
13 years and younger	45.0	58.4	14.0	14.2	8.6	16.0	13.1	13.1
14 years	57.9	68.9	24.2	21.3	15.0	23.8	16.3	15.5
15 years	65.7	78.3	31.8	18.1	24.8	36.3	26.2	26.9
16 years	73.6	80.0	43.2	27.2	29.8	40.2	23.1	33.9
17 years or older	79.2	92.7	50.9	29.5	37.7	60.1	27.6	47.5
Total	65.0	77.9	33.7	22.6	23.8	39.3	22.1	29.8

[a]Table entries indicate the percentage prevalence.
[b]Refers to the percentage who had tried an alcoholic drink at any time in their lives.
[c]Refers to the number who had tried each type of alcoholic beverage during the previous month.

A number of points are striking about the changes over the time under consideration. First, as can be seen in Table 2, there was a major increase in those young people who have ever tried alcohol (lifetime prevalance). The number of young people who had never tried a drink by age 18 had dwindled from over 20% to just over 7%. Second, there were substantial increases in

Table 3.

Comparison of Prevalence of Feeling Drunk and Typical Amount Consumed in 1984 and 1992[a]

	Prevalence drunk[b]		Amount consumed[c]	
Age group	1984	1992	1984	1992
13 years and younger	17.5	22.5	4.1	8.8
14 years	25.4	31.4	9.6	14.1
15 years	38.3	46.8	19.2	28.4
16 years	50.2	53.9	31.2	35.1
17 years and older	58.0	73.1	38.4	51.3
Total	38.7	49.8	20.5	27.7

[a]Table entries indicate the percentage prevalence.
[b]The 1984 question referred to lifetime, while the 1992 question was based on the last year.
[c]Percent consumintg 3 beers or more on a typical drinking occasion.

the numbers who consume large amounts at any given time (Table 3). This suggests that the increase may be in relation of amounts consumed rather than frequency. Third, the strongest evidence that the change in the pattern of consumption has to do with amount consumed comes from the percentages who indicated they felt drunk. In fact, the comparison indicates a dramatic increase at each level. This increase is even more remarkable when it is taken into account that the 1984 question referred to *lifetime* prevalence while the 1992 question pertained to the previous 12 months. In other words, the increase in frequency is hardly fully reflected in the comparison as presented.

This pattern of results suggests that the change in the pattern of youthful drinking is in the direction of the norms and practices that has characterized the drinking of Irish adults, viz., relatively large amounts at any given occasion, and consumption of beer and spirits rather than wine. What is new is the finding that while a significant minority of young Irish people traditionally abstained from alcohol (O'Connor, 1978; Grube and Morgan, 1986), this minority has dwindled substantially.

One possible explanation for the increase in the level of adolescent drinking is that it was a reflection of a greater level of drinking in the population generally. In other words, it might the case that the per capita consumption of alcohol increased dramatically during this time and that this was reflected in the ages at which young people were beginning to drink and the amount and frequency of consumption. This explanation focuses on *alcohol* consumption per se rather than changes in youth culture.

The study by Conniffe and McCoy (1992) presents a detailed account of the consumption of alcohol over the last 30 years *in Ireland as a whole*. Their results indicate that per capita alcohol consumption in Ireland has not changed dramatically over the years in question. Obviously, the limitation of this study is that it represents alcohol consumption in the country as a whole rather than the Dublin area. Nevertheless, it might be expected that if there was a major change in Dublin in which over one-third of the population resides, it would be reflected in the national consumption statistics. Since this is not the case, it seems reasonable to conclude that the change reflects consumption by *youth*.

Changes in Factors Associated with Alcohol Consumption

As noted above, both these studies obtained information from students about a variety of factors relevant to drinking. These included attitudes, normative beliefs, expectancy value beliefs, and general deviance. Unfortunately, the measurement of some of these items was not similar in both surveys. Thus, it was possible to make comparisons with regard to the following factors in

both: 1) Normative influences, 2) Beliefs about consequences, and 3) Problem behavior.

Table 4 presents the mean and standard deviation of each of these in 1984 and 1992 together with the significance of the difference of the mean, as well as the mean *d* (effect size) for each influence. The *d* statistic is commonly used in meta-analyses since it allows for comparisons of measures with different scales. In line with recommended practice, it was calculated as follows:

$$\frac{(1992 \text{ mean}) - (1984 \text{ mean})}{\text{Mean SD } 1984/1992}$$

A number of points are evident from Table 4. The first of these is that there were significant differences in the predicted direction (more favorable to alcohol use) with respect to 10 of the 12 measures. Second, these changes were quite substantial and average about one-third of a standard deviation taking along measures into account. Third, there are substantial differences between the three domains of influence in the extent to which differences were apparent. The changes in relation to beliefs about consequences are especially strong, while changes in normative influences are moderately strong. On the other hand, the changes with regard to problem behavior are not especially large and in two cases are in the direction opposite to that predicted.

Table 4.

Comparison of Measures in 1984 and 1992 Cohorts

Measure	1984 Mean	1992 Mean	*t*	*d*
Normative influences:				
Mother's approval	1.93	2.27	9.44**	.24
Father's approval	1.97	2.33	9.47**	.26
Best friend's approval	3.87	4.27	10.53**	.33
Other friend's approval	4.10	4.50	11.42**	.35
Beliefs about consequences:				
Harm health	2.28	2.97	18.16**	.53
Get into trouble	2.98	3.78	21.05**	.60
Become an alcoholic	3.24	3.79	14.10**	.41
Feel happy	3.05	2.45	16.66**	.47
Problem behavior:				
Lying to teachers	2.89	3.05	4.32**	.13
Lying to parents	2.77	3.13	10.59**	.29
Damaged property	1.64	1.55	N.S.	—
Stolen	1.94	1.83	N.S.	—

**$p = .01$.

Implications and Limitations

The present results indicate that the substantial increases in the drinking patterns of Dublin adolescents over a decade were quite strongly associated with changes in beliefs about the consequences of such behavior and a more supportive normative climate. There was little indication, however, that increases in other forms of problem behavior were associated with this increase in drinking among the younger cohort. These findings have implications, therefore, for theoretical explanations of substance use as well as for approaches to prevention.

As Petraitis et al. (1995) pointed out, beliefs about the consequences of substance use are central to a number of models that attempt to explain such behavior including the theory of reasoned action (Ajzen and Fishbein, 1980) and the theory of planned behavior (Ajzen, 1988). Our results indicate that changes in patterns of use are accompanied by changes in beliefs about consequences, thus supporting the view that such cognitions are important proximal factors in drinking.

The present results are especially supportive of the importance of normative influences on substance use, in particular the finding that the increases in alcohol consumption were accompanied by an increase in perception of social approval. The significance of normative support is stressed in a number of explanations of substance use including the theory of reasoned action as well as social learning models of substance use (Bandura, 1986).

Our results offer only modest support for explanations of substance use that stress problem behavior (e.g., Jessor and Jessor, 1977). This explanation stresses that susceptibility to one kind of problem behavior like underage drinking is associated with other kinds of antisocial behavior like truancy, stealing, and aggressive behavior. It seems that the increase in drinking in the second cohort was associated with greater involvement in relatively minor antisocial acts (lying), but not with more serious forms of antisocial behavior (stealing and vandalism). Interestingly, there is evidence from an earlier study based on factor analyses of what are normally identified as problem behaviors that a general deviance factor is only weakly related to substance use (Grube and Morgan, 1989).

The results have implications for programs designed to delay the onset of drinking or reduce consumption among adolescents. It is interesting to note that many school curricula in Irish secondary schools began to incorporate modules about alcohol consumption during the eighties and early nineties (Morgan et al., 1996). To the extent that these efforts appear not to have been sufficient to prevent the major increase in drinking, the present results underline how ineffectual traditional programs may have been, as the review by Moskowitz

(1989) suggested. However, the present result offer guidelines as to the kinds of prevention approaches that may be of particular value. For example, given the evidence on the normative changes accompanying the increases in drinking, there may be value in focusing on correcting the misperceptions regarding such norms that are frequently held by young people (Hansen, 1992).

These results, therefore, provide support which complements the findings of cross-sectional and longtitudinal studies which have found that beliefs about consequences and normative support are important factors influencing initiation to substance use. The limitations of this work relate to the lack of information on other societal changes that may have occurred in the interval between the two surveys, including reductions in family size, increase in marital breakdown, as well as increasing independence of young people. Future research might give attention to such matters and provide a more comprehensive account of adolescent substance use than has been available until now.

ACKNOWLEDGMENTS

This research was funded in part by the United States Institutes of Health through Grant ROI-AA08097 from the National Institute on Alcohol Abuse and Alcoholism to J.W.G. Thanks are due to the Economic and Social Research Institute for carrying out both surveys and to Patricia Madden, Meng-Jinn Chen, and Bettina Friese who helped in developing the instruments for this survey.

REFERENCES

AJZEN, I. (1988). *Attitude, Personality and Behavior.* Homewood, IL: Dorsey Press.

AJZEN, I., and M. FISHBEIN (1980). *Understanding Attitudes and Predicting Social Behavior.* Englewood Cliffs, NJ: Prentice-Hall.

BANDURA, A. (1986). *Social Foundations of Thought and Action.* New York, NY: Prentice-Hall.

CONNIFFE, D., and McCOY, D. (1992). *Alcohol Use in Ireland—The Economic and Social Implications.* Dublin: ESRI General Publications.

GRUBE, J. W., and MORGAN, M. (1986). *Smoking, Drinking and Other Drug Use among Dublin Post-primary School Pupils.* Dublin: ESRI General Publications.

GRUBE, J. W., and MORGAN, M. (1989). The structure of problem behaviours among Irish adolescents. *Br. J. Addict.* 85: 667–675.

JESSOR, R., and JESSOR, S. L. (1977). *Problem Behavior and Psychosocial Development: A Longtitudinal Study of Youth.* New York, NY: Academic Press.

HANSEN, W. B. (1992). School-based substance abuse prevention: A review of the state of the art in the curriculum, 1980–1990. *Health Educ. Res.* 7: 403–430.

KANDEL, D. B. (1980). Drug and drinking behavior among youth. *Annu. Rev. Sociol.* 6: 235–285.

LEIGH, B. C. (1989). In search of the dwarves: Issues of measurement and meaning of alcohol expectancy research. *Psychol. Bull.* 105: 361–373.

MORGAN, M., and GRUBE, J. W. (1991). Closeness and peer group influence. *Br. J. Soc. Psychol.* 30: 159–169.

MORGAN, M., and GRUBE, J. W. (1994). *Drinking among Dublin Post-primary School Pupils*. Dublin: ESRI General Publications.

MORGAN, M., MORROW, R., SHEEHAN, A. M., and LILLIS, M. (1996). Prevention of substance misuse: Rationale and effectiveness of the programme, 'On My Own Two Feet.' *Oideas: J. Dept. Educ.* 44: 3–25.

MOSKOWITZ, J. M. (1989). The primary prevention of alcohol problems: A critical review of the research literature. *J. Stud. Alcohol* 50: 54–88.

O'CONNOR, J. (1978). *The Young Drinkers: A Cross-National Study of Social and Cultural Influences*. London: Tavistock Publications.

O'CONNOR, J., and DALY, M. (1985). *The Smoking Habit*. Dublin: Gill and Macmillan.

PETRAITIS, J., FLAY, B. R., and MILLER, T. Q. (1995). Reviewing theories of adolescent substance use: Organizing pieces of the puzzle. *Psychol. Bull.* 117: 67–86.

ROOM, R. (1976). Ambivalence as a sociological explanation: The case of cultural explanations of alcohol problems. *Am. Sociol. Rev.* 20: 155–161.

THURMAN, C. (1992). Drinking patterns in Europe. *Prof. Statist.* 11(8): 2–78.

VICARY, J. R., and LERNER, J. V. (1986). Parental attributes and adolescent drug use. *J. Adolesc.* 9: 115–152.

RÉSUMÉ

L'étude de deux groupes d'étudiants irlandais en 1984 et 1992 a révélé une augmentation marquée de la consommation d'alcool et plus particulièrement de l'incidence d'étas d'ivresse admis par les étudiants. Une comparaison des résultats obtenus révèle des changements importants à deux niveaux: la perception des conséquences de la consommation d'alcool favorise une acceptation accrue de la consommation d'alcool, de même, les étudiants perçoivent au sein de la société une plus grande tolérance envers cette dernière. Cependant, les résultats ne permettent pas de dire qu'il existe une forte relation entre des comportements à problèmes et l'augmentation de la consommation d'alcool. Ces résultats soutiennent des recherches sur l'initiation à l'abus de substances et ont des implication au niveau des programmes d'action visant à réduire la consommation d'alcool.

RESUMEN

Diversas investigaciónes de dos grupos de estudiantes irlandeses, en 1984 y 1992, revelaron un aumento dramático en el consumo de alcohol, especialmente en la frequencia en que los estudiantes reconocieron haber estado borrachos. Una comparación de las repuestas obtenadas cada vez, mostró que hay cambios substanciales en la creencia sobre la consecuencias del consumo de alcohol, decantándose favorablemente hacia el consumo y hacia una aceptación social hacia este comportamiento. De todas formas, no se dieron fuertes indicaciones de que los cambios en la conducta de este problema estuvieran asociados con el incremento de los modelos de cunsumo. Estos modelos poseen ciertos

modelos explicativos de iniciación al consumo de drogas y tienen a su vez implicaciónes para ciertos programas envocados hacia la reducción del consumo.

THE AUTHORS

Mark Morgan, Ph.D., is a lecturer and researcher at St. Patrick's College, Dublin. Together with Joel W. Grube, he has investigated a variety of issues relating to substance use including normative influences, impact of beliefs about consequences, as well in the evaluation of the effectiveness of various strategies for prevention. He is actively involved in the new ESPAD project (European Schools Project on Alcohol and Drugs), which is intended to obtain comparable information from several European countries on rates of prevalence.

Joel W. Grube, Ph.D., is a Senior Research Scientist at the Prevention Research Center, Berkeley, California. In the early 1980s he began a program on research on substance use at the Economic and Social Research Institute in Dublin and has collaborated in several studies based on Irish and American data. In addition, he has particular interests in effects of mass media and advertising as well as factors underlying behavior change.

Substance Use & Misuse, 32(5), 621–627, 1997

Toward the Year 2000

Recovery: With and Without Self-Help

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ABSTRACT

Although self-help/mutual-help groups, like Alcoholics Anonymous, are important factors in the recovery of many chemically dependent individuals, the large dropout rates from such groups and the awareness that many who drop out do not return to dependent behavior raises interesting questions about other paths to sustained abstinence and recovery. Current emphasis on treatment outcome studies provides a means for researching factors in both those who recover with and without the assistance of self-help/mutual-help groups. The authors suggest some questions which might be investigated.

Key words. Self-help; Mutual-help; Alcoholics Anonymous; Recovery; Naturistic recovery; Alcohol; Drugs; Research; Outcome

Self-help/mutual-help approaches like Alcoholics Anonymous (A.A.) and Narcotics Anonymous (N.A.) can be an important part of treatment and recovery. They provide a conceptual framework for understanding chemical dependency and recovery as well as a supportive social environment through fellowship with other chemically dependent individuals in which to establish and sustain long-term abstinence (McCrady and Miller, 1993). It is from such self-help/mutual-help groups that the very notion of recovery as a sustained and relatively comfortable abstinence from mind- and mood-altering drugs emerged

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(Alcoholics Anonymous, 1976; Kurtz, 1979; Tonigan et al., 1995; Emerick, et al., 1993). Clearly, there are things which can be learned from the experiences of self-help groups which can illuminate our understanding of the recovery process.

Room (1993) estimates that 3.1% of the adult population of the United States has attended an Alcoholics Anonymous meeting for their own drinking problems and 9% either for their own problems or for someone else's. This points to Alcoholics Anonymous as a significant social force which is widely recognized by those in need of information or assistance when dealing with alcoholism. However, the A.A. triennial survey (Alcoholics Anonymous, 1990) indicates that few individuals who have initial contact maintain that contact for prolonged periods of time. These estimates indicate that by 3 months after initial contact, 50% no longer attend A.A. meetings, and by 12 months 90% have dropped out (McCrady and Miller, 1993). These estimates could be seen as indicative of recent change. However, 25 years ago Ludwig (1970), following a group (n = 145) of alcoholics exposed to Alcoholics Anonymous meetings and principles during residential treatment, reported that, ". . . it appears that approximately 29 percent of the patients attend regularly for the first three months after discharge, but over the entire twelve months the percentage has dropped to 12" (p. 211). However, those who do not continue attending Alcoholics Anonymous do not necessarily fail in their recovery. Bean-Bayog (1993) reported that only a small fraction of individuals recovering from alcoholism use A.A. In a meta-analysis, Emrick (1989) also noted a significant body of data supporting recovery outside of Alcoholics Anonymous. This is also the case in our analysis of Kentucky data from a purposive sample of 1,692 individuals who received treatment for their alcoholism in 1991 and 1992. Of those who reported 12 months of continuous abstinence after discharge (n = 780), 64% reported they did not attend A.A. or N.A. meetings during that period. Interestingly, 80% of those who attend self-help groups regularly and also those who do not attend any self-help groups rated their chances for long-term recovery as very good.

Considerable energy has been directed toward identifying characteristics of those individuals who affiliate with Alcoholics Anonymous. Although among these studies there is no full agreement (Emrick, 1989; Emerick et al., 1993), Hasin and Glick (1992), Snow et al. (1994), McLatchie and Lomp (1988), Kennedy and Minami (1993), and Orford et al. (1975) found that the more severe an alcoholic's dependence, the more likely was affiliation with Alcoholics Anonymous. Dean and Edwards (1990) and Sandoz (1991) found that external locus of control related to likelihood of affiliation. Perhaps it would also be valuable to examine those who do not affiliate with self-help groups. This thought brings a wave of questions and hypotheses. In reflecting on this phe-

nomenon, Chappel (1993) suggested that it may be common "myths" about Alcoholics Anonymous as a cult, folk religion, or substitute dependence which lead to a high rate of attrition. Montgomery et al. (1993) suggested that the heterogeneous nature of A.A. groups may lead to initial difficulty with affiliation due to a "bad fit" between a specific A.A. group and a specific individual or attrition over time as groups change and are no longer congenial places for the values and characteristics of some of their members. It is always important to keep in mind that alcoholics are not a homogeneous group, and consequently neither are groups of recovering alcoholics (Smith, 1993). Whatever the case, we believe there are several fundamental questions which can now be examined, including the following.

- Are rates of relapse different for those recovering in self-help groups and those not involved in self-help?
- Do changes in the larger social structure exert measurable influence on the ability of individuals and specific groups to affiliate or not?
- What happens to alcoholics who drop out of A.A. after brief contact in terms of drinking and other outcomes?
- What prompts individuals who have participated in self-help groups over many months to drop out, and what happens to such individuals?
- How many of those who drop out of self-help groups affiliate with some other organization—are many occupying pews in evangelical churches or sitting in sales meetings for home-based, franchised businesses (Ludwig, 1988)—and why?
- Are there straightforward characteristics (like level of severity) which differentiate those who remain in self-help groups/A.A. from those who don't; or are the differentiating factors more subtle and characterological?
- What do those who have established stable and long-term abstinence without self-help groups/A.A. report has been most significant in accomplishing this change?
- Do individuals drop out of self-help groups largely for purely practical reasons, like the desire to be more involved in the activities of growing children, improvement in an employment or other situation which necessitates greater flexibility in hours and more availability in the evenings, difficulty with transportation, or inability to secure reliable child care?
- Have dropout rates in self-help groups actually increased over time or is it simply that we are now recognized what has been the case for some time?
- If dropout rates have increased, have they increased because of changes in many self-help groups themselves which make them less welcoming and congenial environments for newcomers?

- Are there differences in dropout rates by contextual variables (i.e., rural versus urban settings) and are there different reasons why those who have some contact do not continue between groups?
- Is the tendency to drop out of A.A. specifically related to a history of using multiple substances in addition to alcohol?

These questions are posited at a time when we believe they can be addressed. In the past, identifying subjects who are alcoholic and recovering without benefit of participation in self-help groups and specifically in Alcoholics Anonymous was a difficult task (Ludwig, 1985) and even more difficult for drug addicts. However, today, with great emphasis being placed on outcome studies as a result of changes in health care delivery and financing in the United States, subjects should be more available. As a matter of fact, discrete studies exploring these question could be part of ongoing outcome studies. Further, such studies might provide the opportunity to apply the models and techniques of nonlinear analysis made available through the new artificial sciences like chaos theory, squash, and uncertainty theory (Holder, 1987; Buscema, 1995).

Our current ability to explore the varieties of recovery strategies has never been better. Miller and Rollnick (1991) rightly said that, in the course of treatment, hope arises from the variety of alternative approaches to recovery. It seems we have an opportunity to give greater specificity to that hope by more clearly defining exactly what makes up the variety of such alternatives.

REFERENCES

ALCOHOLICS ANONYMOUS (1976). *Alcoholic Anonymous*. New York, NY: Alcoholics Anonymous World Services.

ALCOHOLICS ANONYMOUS (1990). *Comments on AA's Triennial Survey*. New York, NY: Alcoholics Anonymous World Services.

BEAN-BAYOG, M. (1993). AA processes and change: How does it work? In B. S. McCrady and W. R. Miller (Eds.), *Research on Alcoholics Anonymous: Opportunities and Alternatives* (pp. 99–112), New Brunswick, NJ: Rutgers Center of Alcohol Studies.

BUSCEMA, M. (1995). Squashing theory: A prediction approach for drug behavior. In C. G. Leukefeld and R. R. Clayton (Eds.), *Prevention Practice in Substance Abuse* (pp. 103–110). New York, NY: Hawthorn Press.

CHAPPEL, J. R. (1993). Long-term recovery from alcoholism. *Psychiatr. Clin. N. Am.* 16(1): 177–187.

DEAN, P. R., and EDWARDS, T. A. (1990). Health locus of control beliefs and alcohol related factors that may influence treatment outcome. *J. Substance Abuse Treatment* 7(3): 167–172.

EMRICK, C. D. (1989). Alcoholics Anonymous: Membership characteristics and effectiveness as treatment. In M. Galanter (Ed.), *Recent Developments in Alcoholism, Vol. 7. Treatment Research* (pp. 37–53). New York, NY: Plenum Press.

EMERICK, C. D., TONIGAN, S., MONTGOMERY, H., and LITTLE, L. (1993). Process research perspectives in Alcoholics Anonymous: Measurement of process variables. In B. S.

McCrady and W. R. Miller (Eds.), *Research on Alcoholics Anonymous: Opportunities and alternatives* (pp. 41–78). New Brunswick, NJ: Rutgers Center on Alcohol Studies.

HASIN, D. S., and GLICK, H. (1992). Severity of DSM III-R: United States, 1988. *Br. J. Addict.* 87(12): 1725–1730.

HOLDER, H. D. (1987). Alcoholism treatment and potential health care savings. *Med. Care* 25(1): 52–71.

KENNEDY, B. P., and MINAMI, M. (1993). The Beech Hill Hospital/outward bound adolescent chemical dependency treatment program. *J. Substance Abuse Treatment* 10(4): 395–406.

KURTZ, E. (1979). *Not God: A History of Alcoholics Anonymous*. Center City, NM: Hazelden Foundation.

LUDWIG, A. (1970). *LSD and Alcoholism.* Springfield, IL: Charles C. Thomas.

LUDWIG, A. (1985). Cognitive process associated with "spontaneous" recovery from alcoholism. *J. Stud. Alcohol* 46: 53–58.

LUDWIG, A. (1988). *Understanding the Alcoholic Mind: The Nature of Craving and How to Control It*. New York, NY: Oxford University Press.

McCRADY, B. S., and MILLER, W. R. (Eds.) (1993). *Research on Alcoholics Anonymous: Opportunities and Alternatives*. New Brunswick, NJ: Rutgers Center of Alcohol Studies.

McLATCHIE, B. H., and LOMP, K. G. (1988). Alcoholics Anonymous affiliation and treatment outcome among a clinical sample of problem drinkers. *Am. J. Drug Alcohol Abuse* 14(3): 309–324.

MILLER, W. R., and ROLLNICK, S. (1991). *Motivational Interviewing: Preparing People to Change Addictive Behavior*. New York, NY: Guilford Press.

MONTGOMERY, H. A., MILLER, W. R., and TONIGAN, J. S. (1993). Differences among AA groups: Implications for research. *J. Stud. Alcohol* 54(4): 502–504.

ORFORD, J., HAWKER, A., and NICHOLLS, P. (1975). An investigation of an alcoholism rehabilitation halfway house: Attractions of the halfway house for residents. *Br. J. Addict.* 70(2): 179–186.

ROOM, R. (1993). Alcoholics Anonymous as a social movement, In B. S. McCrady and W. R. Miller (Eds.), *Research on Alcoholics Anonymous: Opportunities and Alternatives* (pp. 167–188). New Brunswick, NJ: Rudgers Center of Alcohol Studies.

SANDOZ, C. J. (1991). Locus of control, emotional maturity, and family dynamics as components of recovery in recoverying alcoholics. *Alcoholism Treatment Q.* 8(4): 17–31.

SMITH, A. R. (1993). Social construction of group dependency in Alcoholics Anonymous. *J. Drug Issues* 23(4): 689–704.

SNOW, M. G,. PROCHASKA, J. O., and ROSSI, J. S. (1994). Process of change in Alcoholics Anonymous: Maintenance factors in long term sobriety. *J. Stud. Alcohol* 55(3): 362–371.

TONIGAN, S. J., TOSCOVA, B., and MILLER, W. R. (1995). *Meta-analysis of the Literature on Alcoholics Anonymous: Sample and Study Characteristics Modify Findings*. Unpublished manuscript, University of New Mexico at Albuquerque.

RESUMEN

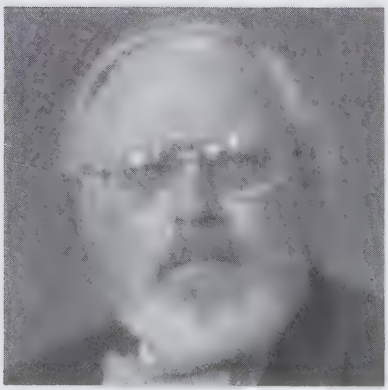
Aunque grupos de autoayuda y ayuda mútua, como los Alcohólicos Anónimos, sean importantes factores en la recuperación de muchos drogadictos, el porcentaje de indivíduos que abandonan esos grupos y el sentimiento de que muchos de los que abandonan el tratamiento no regresan a una conducta de dependencia drogadictiva, genera preguntas interesantes a cerca de otros caminos para mantener la sobriedad y la recuperación. El énfasis actual en

estudios de resultados de tratamientos da una base para investigar los factores en aquellos que se recuperan con o sin asistencia de los grupos de ayuda mútua. Los autores sugieren algunas preguntas que podrían ser raíces de investigación.

RÉSUMÉ

Si des groupes d'autoassistance ou d'assistance mutuelle tels que les Alcooliques Anonymes sont des facteurs importants dans le rétablissement de beaucoup d'individus chimiquement dépendants, il n'en est pas moins vrai que les taux d'abandon élevés et la constatation que beaucoup de personnes qui abandonnent ces groupes ne reviennent pas à un coportement de dépendance, soulève des questions intéressantes concernant d'autres voies vers l'abstinence et le rétablissement durables. L'importance qu'on accorde actuellement à des études centrées sur les résultats de traitements fournit un moyen d'étudier à la fois les individus qui guérissent avec l'aide de groupes d'autoassistance/ assistance mutuelle et ceux qui guérissent en dehors de ces groupes. Les auteurs suggérent quelques questions à étudier.

THE AUTHORS



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Substance Use & Misuse, 32(5), 629–633, 1997

Social Pharmacology

The Rules of Drug Taking: Wine and Poppy Derivatives in the Ancient World. V. Sobriety or Postponement of Drunkenness?

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ABSTRACT

In spite of declared intentions to maintain control of drinking, we have cues that during the symposium enough wine was ingested to get intoxicated. Hence, it was widely debated how much wine could be safety drunk, and the conclusion was that it was a matter of individual endurance. Apparently, elders were less prone to wine-induced loss of rationality and control. In conclusion, the Ancients were aware of potential dangers of wine and that its consumption needed rules, but apparently these rules existed for being broken.

SOBRIETY OR POSTPONENT OF DRUNKENNESS?

An interesting problem is how much wine was drunk during the symposium. We may find some indication in an epigram of the Greek Anthology: "We are four at the party, and each brings his mistress; since that makes eight, one jar of Chian is not enough. Go, my lad, to Aristius and tell him the first he sent was only half full; it is two gallons short certainly; I think more" (Posidippus, 1953). Thus, each participant had roughly 1 L of wine available, more or less equivalent to 100 g ethanol. The ingestion of this quantity of

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alcohol does not fit within our definition of sober behavior, taking into account that a daily intake or more than 40–60 g ethanol is considered harmful (Middleton Fillmore et al., 1994; Karhunen et al., 1994). The dilution of this quantity of wine to up to 4 L would have postponed drunkenness, but it is unlikely that the rate of alcohol metabolism would have equaled the rate of intake. Hence, we may argue that eventually participants to the symposium got intoxicated. Wide literary evidence supports this supposition. In one of his fragments, Anacreon confesses: "And will you not suffer me to go home drunk?" (Anacreon, 1924). And in Plato's Symposium: "Then Pausanias opened a conversation after this manner: "Well, gentlemen, what mode of drinking will suit us best? For my part, to tell the truth, I am in very poor form as a result of yesterday's bout, and I claim a little relief; it is so, I believe, with most of you, for you were at yesterday's party"' (Plato, 1925). These distinguished persons did not follow the advice of Palemon the Academic that "all who went out to dinner to consider how they should indulge in their drinking so that it should be pleasant, not merely for the moment, but also on the day after" (Athenaeus, 1969). Hence the debate on how much wine could be safety drunk. According to Plutarch, this is a matter of individual endurance: "Surely it is not the same thing to be drinking and to be drunk. When men have drunk till they ramble, it is time, we assume, for them to go off to bed; but with men who can take a good deal of wine and go on drinking, who are, apart from that, men of sense, there is no reason to fear that they will miss the mark in reasoning, or be divested of their practiced touch" (Putarch, 1961). This distinction by Plutarch seems to apply quite well to the case of Bonosus, a soldier who became Emperor during the period of anarchy that shook the Roman Empire at the end of the third century. He is introduced in the *Historiae Augustae* as an example of *sobre ivresse*: ". . . he drank as no man had ever drunk. In fact, Aurelian used often to say of him, 'He was born, not to live, but to drink' . . . however much he drank himself, he always remained calm and sober, and . . . when in wine he was all the wiser" (*The Scriptores Historiae Augustae*, 1932a).

Plutarch's passage and Bonosus' example implicitly suggest that the loss of rationality and control made the difference between sobriety and drunkenness, no matter the quantity of wine ingested. Apparently elders were less prone to be prey of wine-induced loss of rationality and control: ". . . when a man has reached the age of forty, he may join in the convivial gathering and invoke Dionysus, . . . thereby we men may renew our youth, and that, through forgetfulness of care, the temper of our souls may lose its hardness and become softer and more ductile . . ." (Plato, 1952). It may not be chance that Nestor was, at once, a notorious tippler and the oldest of the Greek kings besieging Troy. However, at least in some circumstances, the belief that there

are people particularly resistant to alcohol intoxication was surmounted by common sense. When, for instance, the above-quoted Bonosus committed suicide by hanging himself, people joked that "it was not a man that was being hanged but a wine-jug" (*The Scriptores Historiae Augustae,* 1932b).

In conclusion, literary sources quoted here strongly support the existence of a well-woven net of rules addressed to the maintenance of a sober behavior. However, the same sources let also it be understood that these rules did not always reach their aim because they show the existence of hard drinkers. Unfortunately, we have no information about the diffusion of alcoholism in the ancient world, but we can draw the tranquilizing conclusion that little has changed in the last 20 centuries. Wine was recognized as a potential danger, its consumption needed rules, and these rules existed in order to be broken.

REFERENCES

ANACREON (1924). 39, in *Lyra Graeca,* translated by J. M. Edmonds, (Loeb Classical Library, Vol. II. p. 159). London: William Heinemann Ltd.; New York, NY: G. P. Putman's Sons.

ATHENAEUS (1969). The Deipnosophists X, 419d, in *Athenaeus*, translated by C. B. Gulick (Loeb Classical Library, Vol. IV, p. 399). London: William Heinemann Ltd.; Cambridge, MA: Harvard University Press.

KARHUNEN, P. J., ERKINJUNTTI, T., and LAIPPALA, P. (1994). Moderate alcohol consumption and loss of cerebellar Purkinje cells, *Br. Med. J.* 308: 1663–1667.

MIDDLETON FILLMORE, K., GOLDING, J. M., LEINO, E. V., MOTOYOSHI, M., AGER, C. R., and FERRER, H. (1994). Relationships of measures of alcohol consumption with alcohol-related problems in multiple studies: A research synthesis from collaborative alcohol-related longitudinal project. *Addiction* 89: 1143–1156.

PLATO (1925). *Symposium,* 176d, translated by W. R. M. Lamb (Loeb Classical Library. Vol. V, p. 93), London: William Heinemann Ltd.; New York, NY: G. P. Putman's Sons.

PLATO (1952). *The Laws*, II, 666B, translated by R. G. Bury (Loeb Classical Library Vol. I, pp. 133–135). London: William Heinemann Ltd.; Cambridge, MA: Harvard University Press.

PLUTARCH (1961). *Moralia, Table-Talk* VII 10, 715D. In *Plutarch's Moralia*, Vol. IX, p. 99, translated by E. L. Minar Jr., F. H. Sandach, and W. C. Helmold (Loeb Classical Library). London: William Heinemann Ltd.; Cambridge, MA: Harvard University Press.

POSIDIPPUS (1953). V, 183, in *The Greek Anthology*, translated by W. R. Paton. (Loeb Classical Library, Vol. I, p. 219). London: William Heinemann Ltd.; Cambridge, MA: Harvard University Press.

THE SCRIPTORES HISTORIAE AUGUSTAE (1932a). 14, 3–5, translated by D. Magie (Loeb Classical Library, Vol. III, p. 411). London: William Heinemann Ltd.; New York, NY: G. P. Putman's Sons.

THE SCRIPTORES HISTORIAE AUGUSTAE (1932b). 15, 2. *Ibid.*, p. 413.

RESUMEN

A pesar de la evidente intención de mantener el control sobre la asunción alcohólica, hay indicios que nos hacen pensar que la cantidad de vino ingerida

en el simposio era suficiente como para provocar la ebriedad. Nacía aquí la questión, ampliamente debatida, sobre la cantidad máxima de vino que se podía asumir sin emborracharse. La conclusión más frecuente era que este límite dependía de la resistencia individual, pero se estimaba también que los ancianos estaban menos expuestos a la pérdida de control y de racionalidad provocada por el vino. Concluyendo, los antiguos concían muy bien los peligros potenciales relacionados con la asunción del vino, y por eso la regolamentaban, aunque las reglas parecían existir para ser violadas.

RÉSUMÉ

Bien que l'intention de garder un contrôle sur l'ingestion d'alcool fût claire, nous avons des indices qui nous permettent de supposer que la quantité de vin ingérée pendant le symposium était suffisante à provoquer l'ivresse. Il s'ensuivait un grand débat sur la quantité de vin qui pouvait être ingérée sans risquer de s'enivrer. La conclusion la plus répandue était que cette quantatité dépendait de la capacité de résistance individuelle. Mais on considérait en même temps que les personnes âgéees étaient moins exposées à la perte de contrôle et de rationalité que produit le vin. En conclusion, les anciens étaient conscients des dangers en puissance que comporte l'ingestion de vin, ainsi que du besoin de la réglementer. Mais le règles semblaient exister pour être violées.

RIASSUNTO

Malgrado fosse chiara l'intenzione di mantenere il controllo sull'assunzione alcolica, abbiamo indizi per ritenere che la quantità di vino ingerita durante il simposio era sufficiente a provocare ubriachezza. Di qui un ampio dibattito su quanto vino poteva essere assunto senza correre rischi di cadere nell'ebrezza alcolica. La conclusione prevalente era che tale quantità dipendeva dalla resistenza individuale, ma si riteneva anche che l'anziano era meno suscettibile alla perdita di controllo e di razionalità indotta dal vino. In conclusione, gli antichi erano consapevoli dei potenziali pericoli connessi all'assunzione del vino e che quindi tale assunzione richiedesse delle regole. Tuttavia, tale regole sembravano esistere per essere violate.

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Substance Use & Misuse, 32(5), 635–651, 1997

Research Note

Influence of Interpersonal and Mass-Mediated Interventions on Injection Drug and Crack Users: Diffusion of Innovations and HIV Risk Behaviors

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ABSTRACT

Evaluation research of public health media campaigns to influence behavior change often bemoans the lack of relevance to target audience and an absence of integrated interpersonal and mass-mediated communication channels. The assumption that illegal drug users are disconnected from mass-mediated communication may account for this absence of media interventions. The authors used cross-tabulation, chi-square, and regression analyses to demonstrate that many out-of-treatment drug users in an HIV-prevention research project are media consumers and that participants who recalled seeing or hearing media interventions reported greater levels of positive behavior change than participants who did not recall such messages. Results suggest coordination of human and mass-mediated public health messages relevant to this population to facilitate behavior changes.

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Key words. Drug use; HIV risk behavior; Interpersonal intervention; Media intervention

INTRODUCTION

This study examines the influence of human, dyadic intervention versus the combination of this intervention and exposure to public health campaigns on participants' drug use and sexual HIV risk behaviors.* Many studies of campaigns against drug misuse determined that desired changes did not occur because the messages did not reach the target audiences (e.g., Donohew et al., 1991; Field et al., 1983; Flay, 1981, 1983; Flay and Sobel, 1983). The mass media can reach large volumes of people to increase public awareness of health issues and to provide facts that can lead to increased knowledge about the issue (see Table 1). However, such messages often have such general content that they can only stimulate awareness (Alcalay; 1983; Bandy and President, 1983; Hanneman and McEwen, 1973; Wartella and Middlestadt, 1991; see also Brown and Einsiedel, 1990). General content messages can have an opposite effect, for example, shifting from a negative attitude to a less negative attitude toward drugs (Feingold and Knapp, 1977).

Diffusion of innovations theory (Rogers, 1983) asserts that the most effective way to change people's behavior is to communicate, over time, different ideas about an issue through multiple channels. This multistep flow model also asserts that interpersonal channels are the most efficacious way to influence people to modify their behaviors. In many community-based HIV prevention projects, including ours, outreach workers engage members of the target population in dyadic conversations about HIV prevention and provide them with condoms, bleach, and printed information to facilitate safer behaviors (Coyle, 1993; Wiebel, 1993; National Institute on Drug Abuse, 1994; Elwood et al., 1995b).

Stereotypes of drug misusers generally do not consider media consumption; instead, many Americans believe that they do nothing more than consume illegal drugs and commit crimes (see, e.g., Lindesmith, 1940; Elwood, in press; Faupel, 1991; Patterson and Kim, 1991). However, Jason and colleagues (1993) studied 353 participants in a Baltimore IDU facility and found that 48% of respondents first learned of AIDS from TV, and 47% reported that they learned the most about AIDS from TV. Participants recalled AIDS public service announcements during news programs, which 53% reported watching. The Baltimore participants watched television a median of 28 hours a week and listened to the radio a media of 12 hours a week. Clearly this study suggests

*HIV is the abbreviation for the human immunodeficiency virus, which is responsible for the development of acquired immunodeficiency syndrome (AIDS).

Table 1.

Media Influence Channels and Materials

Media influence channel	Materials	Advantages	Disadvantages
Television and radio	PSAs (public service announcements Paid adverstisements	Potential broad reach Broadcast at desired times Certain broad reach Some broadcasters will donate additional time when some advertising is purchased	Broadcast at poor times Expensive
Newspapers, magazines	PSAs, advertisements News and feature stories	Can reach audience segment that is seeking information	Extremely targeted; may reach too few people for time, effort, and money
Direct mail	Brochures, pamphlets	Send message directly to target audience With demographic information, can tailor message to subsets of substance misusers	Extremely mobile audience may never receive information
Telephone	Hotlines for referrals and counseling	Can tailor message specifically to each substance misuser	How will they know the phone numbers without additional interpersonal or mediated message?

that drug misusers are informed about current issues and popular culture, and retain information relevant to their lives. Alperstein (1990) maintained that the use of verbal content of television advertising in conversations indicates the extent to which the content has penetrated popular culture. Although Alperstein did not posit that this "language play" indicates any level of influence on behavior change, his finding suggests that possibility. We sought answers to four questions:

- To what extent are injection drug and crack users media consumers?
- What recall do these individuals have of drug misuse and HIV/AIDS public health campaigns?
- Does the recollection of mass-mediated messages from these campaigns correlate significantly with a decrease in drug use and HIV risk behaviors?
- Does the use of slogans from public health campaigns indicate the adoption of desired behaviors?

METHODS

Out-of-treatment injection drug and crack users in Houston participated in a National Institute on Drug Abuse-sponsored HIV research project. Recruitment used targeted sampling, specifically designed for difficult-to-reach populations (Watters and Biernacki, 1989), and based on four techniques: statistical analysis of risk indicators, observation, snowball sampling, and quota sampling. High drug-use areas were selected using statistical indicators of drug use and risk of disease including arrests rates for drug possession, prostitution, and burglary, and incidence rates of syphilis, tuberculosis, and AIDS. Selected areas were observed to confirm the statistical indicators of chronic drug use (Williams, 1994). Once the areas were selected, female African-American and male Hispanic outreach workers, some in recovery themselves, recruited potential participants, targeting specific individuals who match racial/ethnic, gender, and drug-use characteristics (for descriptions of outreachers and techniques, see Elwood et al., 1995b). Individuals were recruited using ethnic, gender, and drug-use quotas using demographics of selected neighborhoods.

Subjects

To be eligible in the study, participants were required to be 18 years or older, not enrolled in drug user treatment within 30 days prior to recruitment, and have verified drug use. Verification included the visual inspection of IDUs for recent track marks and urine screens for crack smokers and IDUs. Participants received complete explanations of the research project and provided informed consent. Few individuals who met recruitment criteria refused to par-

ticipate; those who refused were unwilling to spend the 2–3 hours involved in the interview process of waiting, interviewing, and specimen and blood collection. They participated in an HIV/AIDS education session that explained how the virus is transmitted in sexual and drug-use contexts, and how to prevent transmission. Participants received condoms and bleach, if appropriate. HIV test participants received pre- and posttest counseling (Coyle, 1993).

Materials and Procedures

Self-report data on drug use and sexual behaviors were collected using the Risk Behavior Assessment (RBA) and Risk Behavior Follow-up Assessment (RBFA) questionnaires. Participating investigators, in collaboration with investigators at the National Institute on Drug Abuse, developed the RBA and RBFA (Weatherby et al., 1995). The questionnaires, pretested with drug misusers during the initial phase of the project, have been reported to produce both reliable and valid data (Weatherby et al., 1995; Dowling-Guyer et al., 1994). The 80-item instruments take 30–45 minutes to complete and collect sociodemographics, medical and drug use treatment histories, and historical and current data on drug use, syringe use, and sexual behaviors. No special skills or abilities are required to respond. Trained interviewers administered the questionnaires in English or Spanish to ensure that people with disparate educational levels had equal opportunities to participate. Advantages for using these instruments include the collection of reliable data and the construction of a comprehensive database (Weatherby et al., 1995). Difficulties can arise if a drug misuser is disoriented or combative during or coming off a drug high.

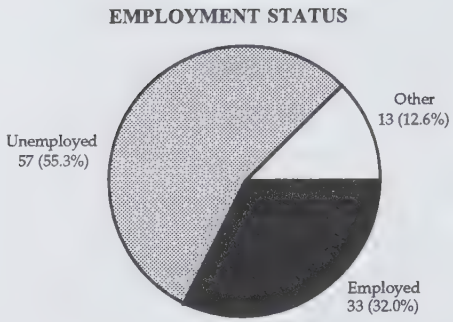
Two to 6 weeks after intake, participants who accepted HIV testing returned for their HIV test results and posttest counseling. Six months later, all individuals returned for an interview to measure changes in their drug use and HIV risk behaviors. During 1994 and 1995, 103 participants [65 men (63.1%) and 38 women (36.9%)] also responded to a questionnaire that measured their media consumption, recollection of intervention campaigns, perceived influence of campaigns and the research project, and implementation of HIV knowledge. Six participants were lost through attrition, leaving the follow-up population at 97. Frequencies and results are reported below. Results are significant at the .05 level, unless otherwise indicated.

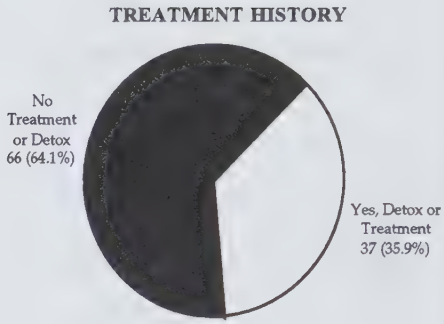
RESULTS

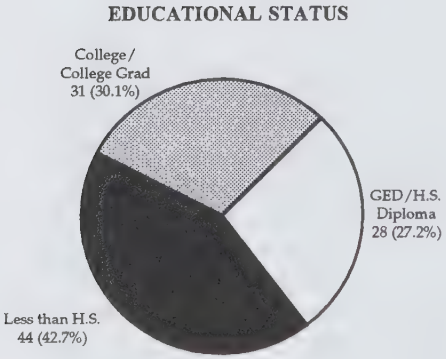
See Table 2 for a description of participants. We asked participants to recall how many hours in a typical week they spent watching television, listening to radio, and reading newspapers and magazines (see Table 3). Almost one-third (31.1%, 32/103) watched no television, but 13.6% (14/103) recalled

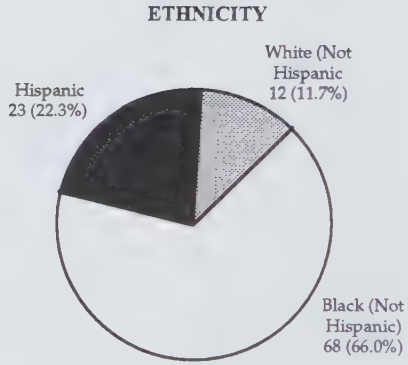
Table 2.

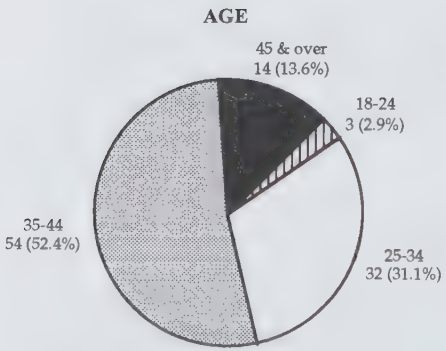
Participant Demographics











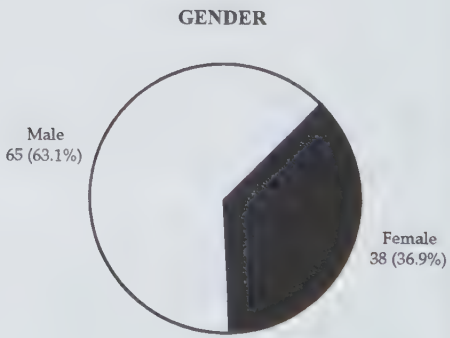


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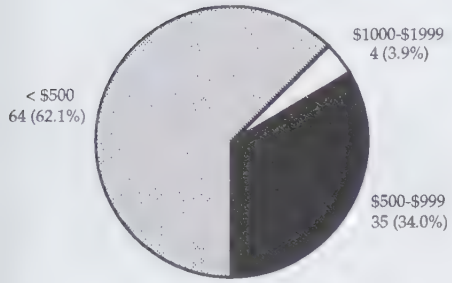
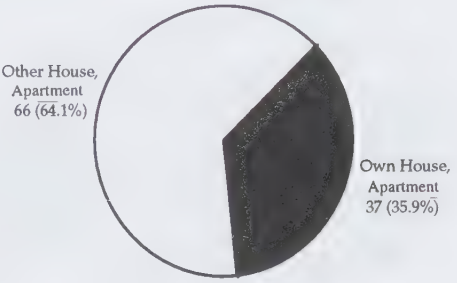
Table 2. *Continued*

INCOME



LIVING ARRANGEMENT



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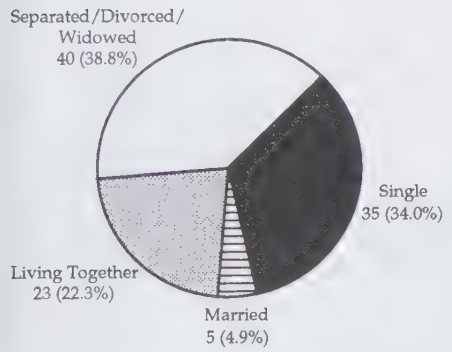
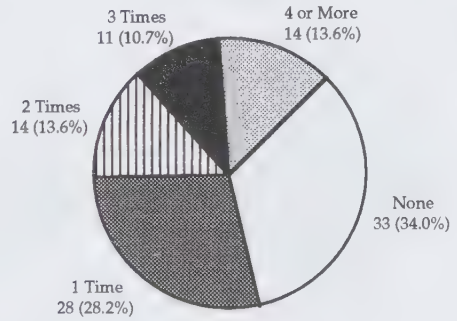


TIMES IN JAIL



DRUGS OF CHOICE

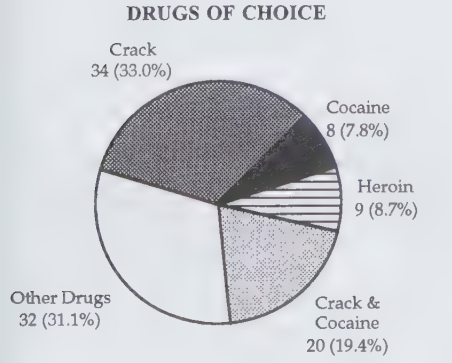


Table 3.

Hours of Media Mean Consumption per Week

Types of media	Intake (N = 103)	
	Frequency	Percent
Watch television:		
None (0 hours)	32	31.1
Seldom (1 hour)	16	15.5
Medium (6–16 hours)	41	39.8
High (17–40 hours)	14	13.6
Listen to radio:		
None (0 hours)	23	22.3
Low (1–3 hours)	27	26.2
Medium (4–10 hours)	30	29.1
High (11 or more hours)	23	22.3
Read newspapers and magazines:		
None (0 hours)	42	40.8
Seldom (1 hour)	8	7.8
Often (2–5 hours)	29	28.2
Frequently (6 or more hours)	24	23.3

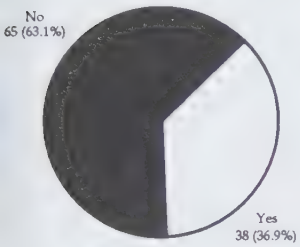
17–40 hours of weekly television viewing. Radio attendance was somewhat higher, with only 22.3% (23/103) reporting no radio use per week. Given the reported education levels, it is not surprising that 40.8% (42/103) did not read in a given week. However, all of the 61 people who read in a given week reported reading one of Houston's two daily newspapers. Forty-nine participants said they read newsmagazines such as *Time* and *Newsweek*, and 17 people said they regularly read Spanish-language publications. Table 4 lists the mediums in which participants recalled seeing messages.

Recollection of Mass-Mediated Intervention Campaign Slogans. This media-literate population recalled messages from intervention campaigns during the week preceding their interviews (see Table 6). When asked to recall what slogans they remembered from the campaigns, participants provided 54 different responses. Of those, 24 respondents remembered "Just say 'no,'" and four recalled "DARE to keep your kids off drugs." Two Partnership for a Drug-Free America spots were recalled frequently: 10 participants mentioned the "Frying Pan" spot ("This is drugs. This is your brain on drugs. Any questions?"), and 9 recalled a public service announcement in which a male cocaine user speaks and spins repeatedly (see also Elwood and Ataabadi, 1996). Table 7 described participants' responses to intervention campaigns and Table 8 describes the relationship between recollection of messages and reduction in HIV risk behaviors.

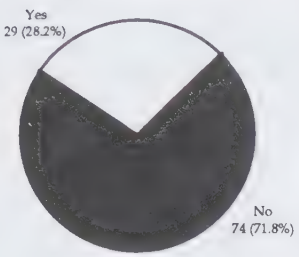
Table 4.

Message Recall Medium

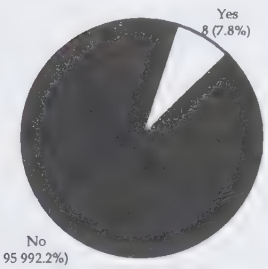
BILLBOARD ADS



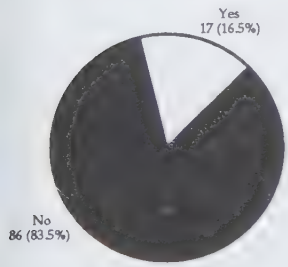
BUS SIDE ADS



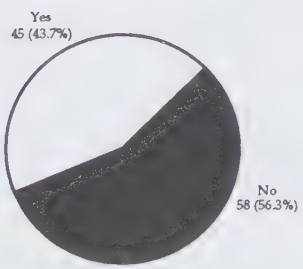
PHONE BOOKS



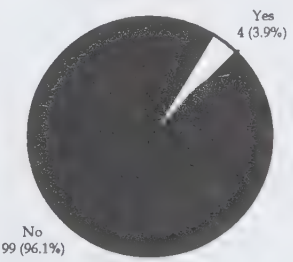
BUS STOP SIGNS



POSTERS AT CENTER



PAY PHONE ADS



POSTERS AT DOCTOR'S OFFICE

FLYERS

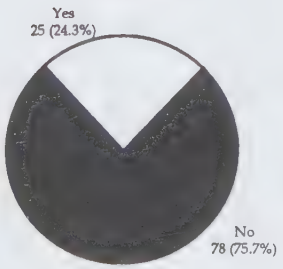


Table 5.

Recollection of Media Intervention Campaigns and Reduction in HIV Risk Behaviors

Variable	Never (0 times)	Sometimes (1–5 times)	Often (6–10 times)	Almost always (11–20 times)
Times Used Dirty Works in the Past 30 Days at Intake (N = 103)				
Commercials about AIDS				
No, I haven't seen	44 (42.7%)	4 (3.9%)	3 (2.9%)	5 (4.9%)
Yes, I have seen	34 (33.0%)	5 (4.9%)	2 (1.9%)	6 (5.8%)
Times Used Dirty Works in the Past 30 Days at Follow-up (N = 97)				
Commercials about AIDS				
No, I haven't seen	46 (47.4%)	3 (3.1%)	0 (0.0%)	4 (4.1%)
Yes, I have seen	41 (42.3%)	0 (0.0%)	2 (2.1%)	1 (1.0%)

DISCUSSION

Like any other study, this one has limitations. The sample used was not random, but a sample of not-in-treatment drug users at risk for HIV infection recruited through targeted sampling. Although this study cannot be generalized beyond the sample, it demonstrates the effectiveness of media intervention

Table 6.

Frequency of Injected with Used Works and Media Interventions Recalled

	Used works?		
Seen commercials?	Never (0 times)	Seldom (1–6 times/month)	Often (7–40 times)
Never:	25	5	9
Column %	32.1	50.0	60.0
Total %	24.3	4.9	8.7
1 or 2:	22	1	2
Column %	28.2	10.0	13.3
Total %	21.4	1.0	1.9
3 or 4:	17	0	2
Column %	21.8	0.0	13.3
Total %	16.5	0.0	1.9
5 or 6:	8	4	2
Column %	10.3	40.0	13.3
Total %	7.8	3.9	1.9
6 or more:	6	0	0
Column %	7.7	0.0	0.0
Total %	5.8	0.0	0.0

Table 7.

Participants Who Recalled Media Intervention Campaigns at Intake (N = 103)

Value label	Frequency	Percent
Commercials about AIDS:		
0	56	54.4
1	11	10.7
2	9	8.7
3	4	3.9
4	2	1.9
5	16	15.5
6	2	1.9
7	2	1.9
8	1	1.0
Commercials about drugs:		
0	52	50.5
1	16	15.5
2	5	4.9
3	6	5.8
4	5	4.9
5	11	10.7
6	1	1.0
8	1	1.0
10	2	1.9
11	1	1.0
12	2	1.9
20	1	1.0
Commercials about alcohol use:		
0	49	47.6
1	12	11.7
2	10	9.7
3	11	10.7
4	3	2.9
5	10	9.7
6	1	1.0
7	2	1.9
10	3	2.9
16	1	1.0
20	1	1.0
Commercials like the "Frying Egg"		
0	66	64.1
1	12	11.7
2	5	4.9
3	3	2.9
4	2	1.9
5	6	5.8
7	2	1.9
8	1	1.0
10	5	4.9
20	1	1.0

Table 8.

Responses to Public Health Campaigns from Out-of-Treatment Drugs Users Who Use Intervention Slogans (N = 19)

Value	Frequency		
	Disagree	Agree	Don't know
These ads remind me to practice safer sex techniques I've learned through this project	1	17	1
These ads remind me to always use new needles or to bleach and rinse works before I shoot up	6	9	4
These ads do not affect me at all	1	17	1
These ads scare me about HIV and AIDS	5	13	1
I think these ads make people get off drugs	10	7	2
These ads stop kids from ever using drugs	10	8	1
I remember what I've learned through this project without the help of these public service ads	4	14	1
It think these ads are useless	16	3	1
These ads do not help anyone	7	10	2
They should stop running these ads	17	2	1

campaigns on active drug users and is likely more generalizeable to the illegal drug-using population than are college students.

All of our research questions were answered affirmatively. The participants in this study are tuned into mass media to a greater extent than was previously surmised. They can recall public health campaigns. Although they believe mass-mediated intervention messages do not influence them, they changed their behavior to a greater extent than those who reported partaking only in a dyadic interpersonal intervention. Out-of-treatment injection drug and crack users believe that the messages they receive are far removed from their reality. This finding reiterates the need for public health messages relevant to their respective target populations.

The data on the drug use and sexual HIV risk behaviors among this population are frightening (e.g., Williams, 1990; Williams and Elwood, 1995; Elwood, 1995; Elwood et al., 1995a). The need for relevant public health messages on safer sex and drug-use practices becomes more imperative when considered with this study's findings. Regardless of how desperately they are needed, future campaigns that tell people not to share needles, cookers, or rinse water—or to ensure that bleach remains in a syringe at least for 30 seconds—are not likely to be broadcast on United States television. Instead, messages that speak to and from drug-users' experiences could be disseminated through print and closed-circuit television in clinics and outreach centers.

Some drug users in this study appear to be public health campaigners themselves. Many (60.2%, 62) have told other IDUs about safer drug use techniques; 62.1% (64) reported sharing information about preventing HIV/AIDS, and 61.2% (63) have shared information about safer sex. They even act as project recruiters; 63.1% (65) said that they had referred injection drug or crack users to our research project. Obviously, research on a larger sample could determine if a large-scale, target-specific, mass-mediated public health campaign is warranted—what media to target to reach sufficient numbers of drug users and whether public opinion would support such efforts.

ACKNOWLEDGMENTS

This research was supported by the National Institute on Drug Abuse (NIDA Grant DA06906-05) and by an Auburn University Research Grant-in-Aid. However, the interpretations and conclusions are solely those of the authors. The authors would like to thank Tina McPherson for her assistance in the preparation of this manuscript.

REFERENCES

ALCALAY, R. (1983). The impact of mass communication campaigns in the health field. *Soc. Sci. Med.* 17: 87–94.

ALPERSTEIN, N. (1990). The verbal content of advertising and its circulation in everyday life. *J. Advert.* 19(2): 15–22.

BANDY, P., and PRESIDENT, P. A. (1983). Recent literature on drug abuse prevention and mass media: Focusing on youth, parents, women, and the elderly. *J. Drug Educ.* 13: 255–271.

BLACK, G. S. (1991). Changing attitudes toward drug use: The effects of advertising. In L. Donohew, H. E. Sypher, and W. J. Bukowski (Eds.), *Persuasive Communication and Drug Abuse Prevention* (pp. 157–191). Hillsdale, NJ: Lawrence Erlbaum Associates.

BROWN, J. D., and EINSIEDEL, E. F., (1990). Public health campaigns: Mass media strategies. In E. B. Ray and L. Donohew (Eds.), *Communication and Health: Systems and Applications* (pp. 153–170). Hillsdale, NJ: Lawrence Erlbaum Associates.

COYLE, S. L. (1993). *The NIDA Standard Intervention model for Injection Drug Users Not in Treatment*. Rockville, MD: National Institute on Drug Abuse.

DEVINE, P. G., and HIRT, E. R. (1989). Message strategies for information campaigns: A social psychological analysis. In C. T. Salmon (Ed.), *Information Campaigns: Balancing Social Values and Social Change* (pp. 229–258). Newbury Park, CA: Sage Publications.

DONOHEW, L., LORCH, E., and PALMGREEN, P. (1991). Sensation seeking and targeting of televised anti-drug PSAs. In L. Donohew, H. E. Sypher, and W. J. Bukowski (Eds.), *Persuasive Communication and Drug Abuse Prevention* (pp. 209–226). Hillsdale, NJ: Lawrence Erlbaum Associates.

DOWLING-GUYER, S., JOHNSON, M. E., FISHER, D. G., NEEDLE, R. H., WATTERS, J. K., ANDERSEN, M., WILLIAMS, M. L., KOTRANSKI, L., BOOTH, R., RHODES, F., WEATHERBY, N., ESTRADA, A., FLEMING, D., DEREN, S., and TORTU, S. (1994). Reliability of drug users' self-reported HIV risk behaviors and validity of self-reported recent drug use. *Assessment* 1: 383–392.

ELWOOD, W. N. (1995). Lipstick, needle, and company: A case study of the structure of a bridge group in Houston, Texas. *Connections* 18(1): 46–57.

ELWOOD, W. N. (in press). The narrative ethics of injection drug users. *Ethics Crit. Thinking Q.*

ELWOOD, W. N., and ATAABADI, A. N. (1996). Tuned in and tuned off: Injection drug and cocaine users' responses to media intervention messages. *Commun. Rep.* 9(1): 1–11.

ELWOOD, W. N., WILLIAMS, M. L., BELL, D. C., and RICHARD, A. J. (1995a). Strawberry fields: Contexts and outcomes of sex-for-drugs exchanges. *AIDS Care* 9(2), in press.

ELWOOD, W. N., MONTOYA, I. D., RICHARD, A. J., and DAYTON, C. A. (1995b). To hang in the 'hood: The description and analysis of outreach activities. *J. Psychoactive Drugs* 27(3): 249–259.

FAUPEL, C. E. (1991). *Shooting Dope: Career Patterns of Hard-Core Heroin Users*. Gainesville, FL: University of Florida Press.

FEINGOLD, P. C., and KNAPP, M. L. (1977). Anti-drug abuse commercials. *J. Commun.* 27: 20–28.

FIELD, T., DEITRICK, S., HERSEY, J. C., PROBST, J. C., and THEOLOGUS, G. C. (1983). *Implementing Public Education Campaigns: Lessons from Alcohol Use Prevention (Summary Report to the National Institute on Alcohol Abuse and Alcoholism)*. Washington, D.C.: Kappa Systems.

FLAY, B. R. (1981). On increasing the chances of mass media health promotion programs causing meaningful changes in behavior. In M. Meyer (Ed.), *Health Education by Television and Radio*. Munich: Saur.

FLAY, B. R. (1983). *State-of-the-Art in Mass Media and Smoking Behavior*. Paper presented at the NCI workshop on smoking prevention and cessation, Washington, D.C.

FLAY, B. R., and SOBEL, J. L. (1983). The role of the mass media in preventing adolescent substance abuse. In T. J. Glynn, C. G. Leukefeld, and J. P. Lundford (Eds.), *Preventing Adolescent Drug Abuse: Intervention Strategies* (NIDA Research Monograph 47). Rockville, MD: National Institute on Drug Abuse.

HANNEMAN, G. J., and McEWEN, W. J. (1973). Televised drug abuse appeals: A content analysis. *Journalism Q.* 50: 329–333.

JASON, J., SOLOMON, L., CELENTANO, D. D., and VLAHOV, D. (1993). Potential use of mass media to reach urban intravenous drug users with AIDS prevention messages. *Int. J. Addict.* 28: 837–851.

LINDESMITH, A. (1940). "Dope fiend" mythology. *J. Crim. Law Criminol.* 31: 199–208.

NATIONAL INSTITUTE ON DRUG ABUSE (1994). *Outreach/Risk Reduction Strategies for Changing HIV-Related Risk Behaviors among Injection Drug Users: The National AIDS Demonstration Research (NADR) Project*. Rockville, MD: National Institute on Drug Abuse.

PATTERSON, J., and KIM, P. (1991). *The Day America Told the Truth: What People* Really *Think about Everything That Really Matters*. New York, NY: Prentice-Hall.

ROGERS, E. M. (1983). *Diffusion of Innovations* (3rd ed.). New York, NY: Free Press.

ROGERS, E. M., and STOREY, J. D. (1987). Communication campaigns. In C. R. Berger and S. H. Chaffee (Eds.), *Handbook of Communication Science* (pp. 817–846). Newbury Park, CA: Sage Publications.

WARTELLA, E., and MIDDLESTADT, S. (1991). Mass communication and persuasion: The evolution of direct effects, limited effects, information processing, and affect and arousal models. In L. Donohew, H. E. Sypher, and W. J. Bukowski (Eds.), *Persuasive Communication and Drug Abuse Prevention* (pp. 53–69). Hillsdale, NJ: Lawrence Erlbaum Associates.

WATTERS, J. K., and BIERNACKI, P. (1989). Target sampling: Options for the study of hidden and elusive populations. *Soc. Probl.* 36: 416–430.

WEATHERBY, N. L., NEEDLE, R. H., CESARI, H., BOOTH, R., McCOY, C. B., WATTERS, J. K., WILLIAMS, M. L., and CHITWOOD, D. D. (1995). Validity of self-reported drug use among injection drug users and crack cocaine users recruited through street outreach. *Eval. Program Plann.* 17: 347–355.

WIEBEL, W. W. (1993). *The Indigenous Leader Outreach Model: Intervention Manual.* Rockville, MD: National Institute on Drug Abuse.

WILLIAMS, M. L. (1990). A model of the sexual relations of young IV drug users [letter to the editor]. *J. Acquired Immune Deficiency Syndromes* 3: 192–194.

WILLIAMS, M. L. (1994). *Houston Cooperative Agreement Study Manual.* Houston, TX: Affiliated Systems Corporation.

WILLIAMS, M. L., and ELWOOD, W. N. (1995). An investigation of the risks of transmitting HIV infection in two networks of male prostitutes in Houston, Texas: A report on preliminary findings. In M. G. Everett and K. Rennolls (Eds.), *Sociology and Large Networks: Proceedings of the International Conference on Social Networks*, Vol. 2 (pp. 151–157). Greenwich, UK: Greenwich University Press.

RESUMEN

La evaluación del estudio de campañas de comunicación de salud pública dedicadas a influenciar cambios de comportamiento denota que éstas frecuentemente adolecen de relación pertinente al público objeto de estudio y caracen de integración entre conductos interpersonales y medios de comunicación. La suposición de que los farmacodependientes de drogas ilicitas están desconectados de los medios de comunicación puede explicar la falta de intervenciones a nivel masivo. Los autores usaron métodes de tabulación contingente, xi-cuadrada y análisis de regresión para demostrar que, en un estudio de prevención de VIH, muchos de los farmacodependientes sin tratatameinto de abuso de drogas son consumidores de medios de communicación, y que aquellos participantes recordando haber visto o escuchado intervenciones en los medios de communicación reportaron niveles de cambios de comportamiento positivos superiores al de aquellos participantes sin recordar este tipo de mensajes. Los resultados sugieren que la coordinación de mensajes de salud pública pertinentes a esta población, a nivel personal y a nivel de medios de comunicación, favorecen cambios de comportamiento.

RÉSUMÉ

L'Étude de l'évaluation de la campagne du secteur de la santé publique pour influencer le changement de conduite chez les drogués, souvent manque le detail nécessaire pour obtenir une audience objectif ainsi qu'une absence entiére des moyens de communication. La supposition que les drogués sont deconnéctes de tout les moyens de communication. Les auteurs de cette étude ont utilizer divers systèmes pour démontrer que plusieurs participants du projèt pour la prévention de l'HIV, qui se droguent et ne participent pas dans un

traitement contre la drogue, sont informer sur le suject et répondent positivement au changement de conduite vis-à-vis la prévention du HIV. Les résultats suggérent qui'il éxiste une coopération entre les drogués et le secteur de la santé publique que facilite leur changement de conduite vers la drogue.

THE AUTHORS

William N. Elwood, Ph.D., has conducted research on drug control issues for eight years. He is particularly interested in providing a voice for illegal drug users, a voice that is conspicuously silent in the US conversation regarding drug control policy. Since 1994 his work has concentrated on HIV transmission among substance-using subgroups including homeless people, ethnic minority women, male and female prostitutes, and men who have sex with men. Currently, Elwood is senior research scientist with NOVA Research Company. When this study was conducted, he was coprincipal investigator for the Cooperative Agreement for AIDS Community-Based Outreach/Intervention, a National Institute on Drug Abuse-Funded HIV research project. He also is adjunct assistant professor at the University of Texas School of Public Health in Houston. Elwood received his Ph.D. from Purdue University (West Lafayette, IN) in 1992. His articles appear in journals including *Connections, Metaphor and Symbolic Activity, Communication Reports*, and the *Journal of Psychoactive Drugs*. His books, *Rhetoric in the War on Drugs: The Triumphs and Tragedies of Public Relations* and *Public Relations as Rhetorical Inquiry: Case Studies of Corporate Discourse and Social Influence* are Praeger publications.

Ali N. Ataabadi, M.A., is a researcher with Affiliated Systems Corporation and data manager for the Cooperative Agreement Community-Based AIDS Prevention/Intervention, an HIV-prevention project funded by the National Institute on Drug Abuse. His current interests are cross-cultural research on psychological functioning of psychoactive drug users and the effectiveness of mass media communication on people's HIV/AIDS risk behaviors. Ataabadi is also a doctoral candidate in Counseling Psychology at Texas Southern University in Houston, Texas. His dissertation examines the levels of anxiety and depression in a national sample of illegal drug users.

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Volume 32 Number 5 1997

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